



H.R.H. PRINCE ALBERT'S  
MODEL HOUSES FOR FAMILIES  
1851.

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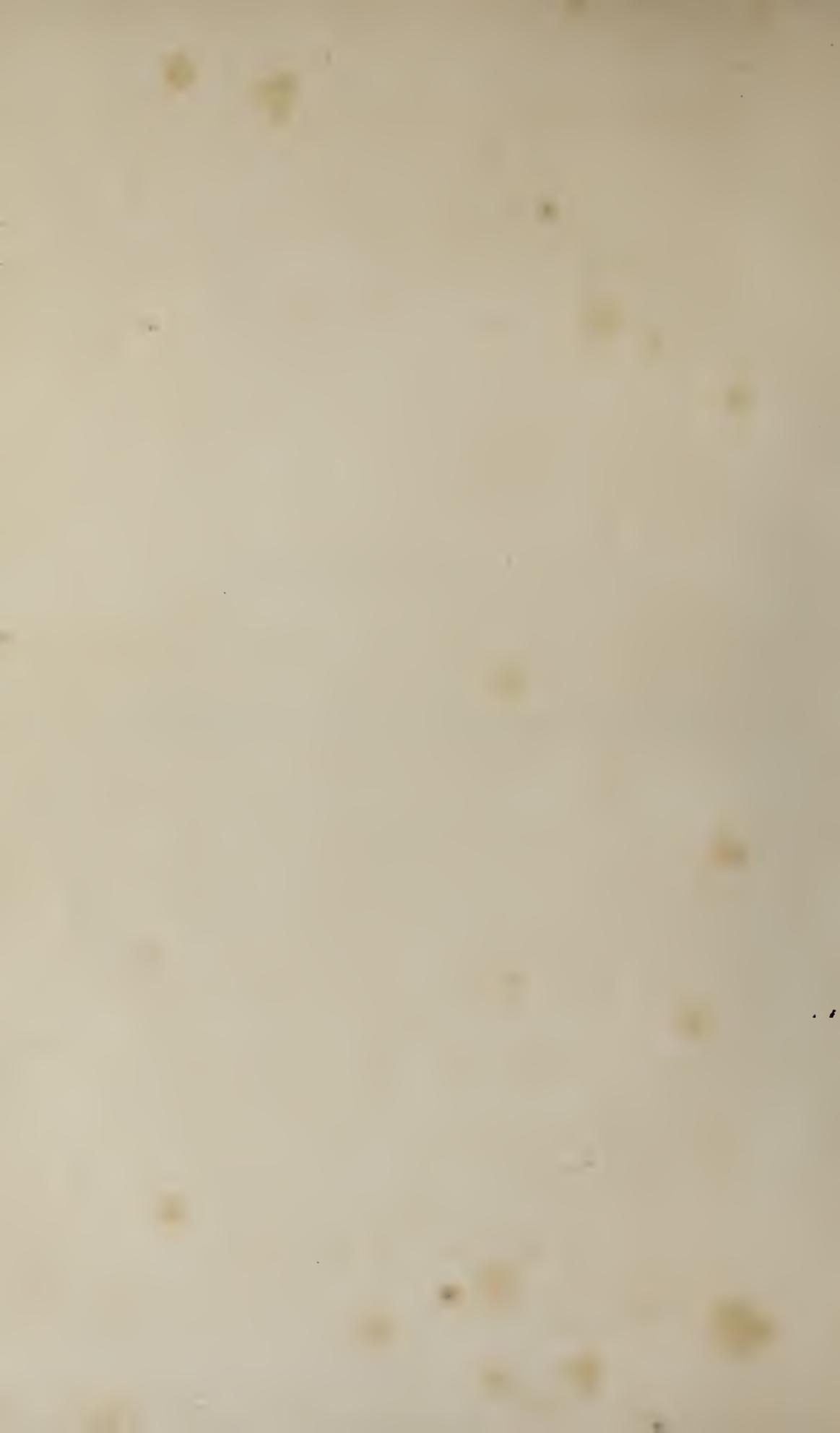
25th  
Exhibition





H. R. H. PRINCE ALBERT'S  
MODEL HOUSES FOR FAMILIES.

1851.





Day & Son, Litho. to the Queen



THE QUEEN'S RESIDENCE IN MELBOURNE, AUSTRALIA, DRAWN AND ENGRAVED IN METAL BY H. D. COOPER, 1852, FROM A SKETCH BY J. M. W. TURNER.

THE  
MODEL HOUSES FOR FAMILIES,

BUILT IN CONNEXION WITH

THE GREAT EXHIBITION OF 1851,

By Command of

HIS ROYAL HIGHNESS

THE PRINCE ALBERT, K.G.

PRESIDENT OF THE SOCIETY FOR IMPROVING THE CONDITION OF  
THE LABOURING CLASSES.

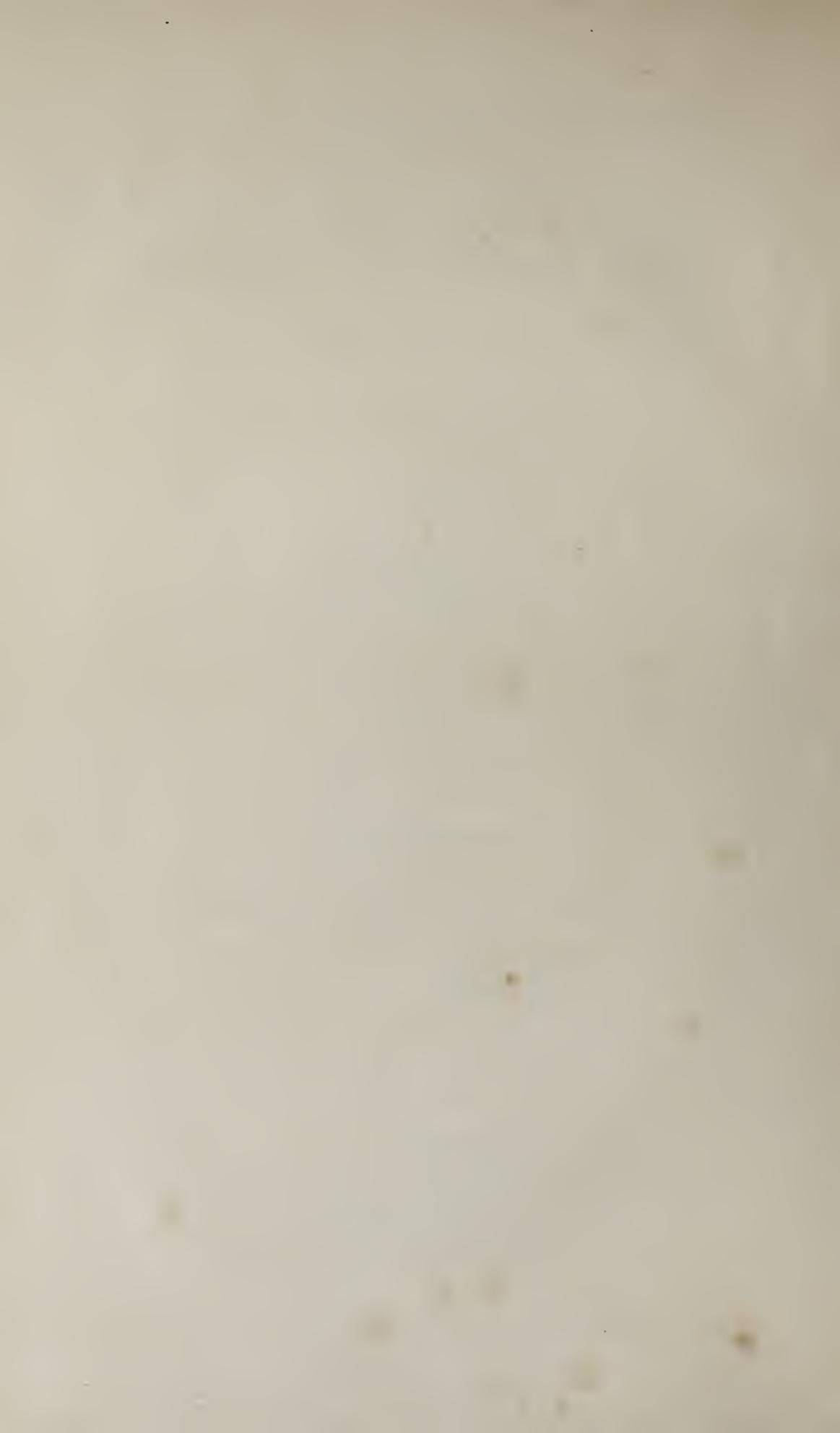
BY

HENRY ROBERTS, F.S.A.

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THE LABOURING CLASSES.

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PUBLISHED BY REQUEST, AND SOLD FOR THE BENEFIT OF  
THE SOCIETY FOR IMPROVING THE CONDITION OF THE LABOURING CLASSES,  
AT No. 21, EXETER HALL, STRAND, LONDON;  
ALSO BY SEELEYS, FLEET STREET, AND HANOVER STREET; NISBET & CO., BERNERS STREET;  
J. W. PARKER AND SON, WEST STRAND AND HATCHARD, PICCADILLY.



AMONGST the vast collection of objects presented in the Great Exhibition of 1851, the visitor who estimates their real value and importance, not by the cost or labour of production, not by artistic merit or gorgeous effect, but by their adaptation to advance the physical, social, and moral condition of the great masses of the people—of those who form the basis of the social edifice, will justly and gratefully appreciate the unpretending contribution made by His Royal Highness the PRINCE ALBERT, of *Model Houses for Families*, of the class of manufacturing and mechanical operatives, which forms the subject of the following description.

The plans, constructive details, specification and estimate of cost are published with a view to facilitate the adoption of the design, either in whole or in part, by those who may desire to do so; and with the further object of illustrating the adaptation of the peculiar arrangement of these houses to buildings of a more extended character, two elevations are given which show how the same plan may be carried out in more lofty blocks of houses.



# MODEL HOUSES FOR FOUR FAMILIES,

ERECTED AT THE CAVALRY BARRACKS,  
HYDE PARK,

IN CONNEXION WITH THE GREAT EXHIBITION OF 1851.

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HIS ROYAL HIGHNESS THE PRINCE ALBERT has had this building raised on his own account, with a desire of conveying practical information calculated to promote the much-needed improvement of the dwellings of the Working Classes, and also of stimulating Visitors to the Exhibition, whose position and circumstances may enable them to carry out similar undertakings, and thus without pecuniary sacrifice, permanently to benefit those whose labour and skill are there so much displayed, and who greatly depend on others for their home and family comforts.

In its *general arrangement*, the building is adapted for the occupation of four families of the class of manufacturing\* and mechanical operatives, who usually reside in towns, or in their immediate vicinity; and as the value of land, which leads to the economizing of space, by the placing of more than one family under the same roof, in some cases, renders the addition of a third, and even of a fourth story desirable, the plan has been suited to such an arrangement, without any other alteration than the requisite increase in the strength of the walls.

The most prominent peculiarity of the design is that of the receding and protected central open staircase, with the connecting gallery on the first floor, formed of slate, and sheltered from the weather by the continuation of the main roof, which also screens the entrances to the dwellings.

The four tenements are arranged on the same plan, two on each floor.

The entrance is through a small *lobby*, lighted from the upper part of the door.

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\* Plans for Cottages in *agricultural* districts, with Working Drawings, Specifications, and Bills of Quantities, are published by the Society for Improving the Condition of the Labouring Classes, No. 21, Exeter Hall, Strand.

The *living room* has a superficial area of about 150 feet, with a closet on one side of the fireplace, to which warm air may be introduced from the back of the range; over the fireplace is an iron rod for hanging pictures; and on the opposite side of the room a rail is fixed level with the top of the doors, and above it a shelf may be placed if desired.

The *scullery* is fitted up with a sink, beneath which is a coal-bin of slate; a plate-rack at one end, drained by a slate slab into the sink, covers the entrance to the dust-shaft, which is enclosed by a balanced self-acting iron door. The dust-shaft leads into a closed depository under the stairs, and has a ventilating flue, carried up above the roof. The meat safe is ventilated through the hollow brickwork, and shelves are fixed over the doors. A dresser flap may be fixed against the partition.

The *sleeping apartments*, being three in number, provide for that separation which, with a family, is so essential to morality and decency. Each has its distinct access, and a window into the open air; two have fire-places.

The children's bed-rooms contain 50 feet superficial each, and, opening out of the living room, an opportunity is afforded for the exercise of parental watchfulness, without the unwholesome crowding of the living room, by its use as a sleeping apartment.

The parents' bed-room, with a superficial area of about 100 feet, is entered through the scullery—an arrangement in many respects preferable to a direct approach from the living room, particularly in case of sickness. The recess in this room provides a closet for linen; and a shelf is carried over the door, with a rail fixed beneath it—a provision which is made in each of the other bed-rooms.

The *water-closet* is fitted up with a Staffordshire glazed basin, which is complete without any wood fittings, and supplied with water from a slate cistern in common of 250 gallons, placed on the roof over the party and stair-case walls. The same pipes which carry away the rain-water from the roof serve for the use of the closets.

#### *Constructive Arrangement.*

The peculiarities of the building in this respect are, the exclusive use of hollow bricks for the walls and partitions, (excepting the foundations, which are of ordinary brickwork,) and the entire absence of timber in the floors and roof, which are formed with flat arches of hollow brickwork, rising from 8 to 9 inches, set in cement, and tied in by wrought-iron rods connected with cast-iron springers, which rest on the external walls, and bind the whole structure together; the building is thus rendered fire-proof, and much less liable to decay than those of ordinary construction. The roof arching, which

is levelled with concrete, and covered with patent metallic lava, secures the upper-rooms from the liability to changes of temperature to which apartments next the roof are generally subject, and the transmission of sound, as well as the percolation of moisture, so common through ordinary floors, is effectually impeded by the hollow-brick arched floors.

The external and main internal walls are of patent bonded brickwork, which has the important advantages of securing dryness and warmth,\* with economy of construction; another great benefit arising from the use of hollow bricks† is, that where they are laid double, in parallel courses, without headers, as in the patent bonded brickwork, the internal face of the wall is sufficiently smooth to render plastering unnecessary. In the present instance, where plastering has been resorted to, it is confined to one side of a thin partition, or to partitions formed with bricks not intended for the situation in which they are used.

In regard to some other parts of the brickwork, it should also be observed, that owing to the erection of the building having been determined on late in the winter, many difficulties had to be contended with in obtaining a sufficient supply of hollow bricks; and from accidental circumstances, disappointments were experienced in reference to a considerable number, on which account the structure should be regarded rather as the pledge of future excellence in hollow-brick construction than as its full accomplishment.

The glazed surface of the bricks used in the two upper-floor living-rooms, and at the foot of the staircase, may be referred to as a specimen of what can be accomplished by the skilful adaptation of fitting materials, and as highly creditable to their maker. Specimens of glazed bricks of clay from the north of Devon are also exhibited.

The advantages afforded by the use of hollow bricks in securing an effective system of insensible *ventilation*, deserves particular notice. Fresh air is admitted from any suitable point of the exterior of the building to a chamber at the back of the living-room fireplace, where being warmed, it may be conducted to any convenient place of exit above the level at which the fresh air is admitted. Vitiated air may be conveyed either into the chimney flue or to any other suitable place of exit through the upper wall courses, perforated for this purpose, beneath the springing of the arch, or

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\* Those who are conversant with the evils resulting from the absorption of moisture by common bricks, and the consequent loss of temperature in rooms by evaporation, will duly appreciate these advantages.

† A further description of hollow brickwork, and of the advantages derivable from its use, is given at page 12; also the result of experiments made in order to ascertain the strength of hollow bricks, and of arches formed with them, as well as of the iron work used in connexion therewith.

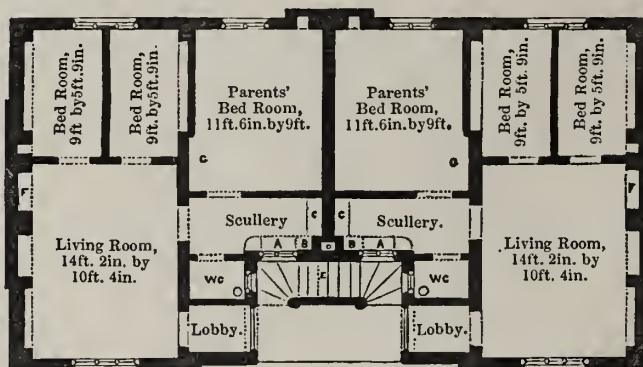
through the arch bricks themselves. Suitable air-bricks and ventilators have been prepared with these express objects in view.

Internally French plaster has been used, as drying quicker, and having a harder surface than ordinary plaster. The floors, where not of Portland cement, are laid with Staffordshire tiles, excepting to the right-hand room, first floor, which is of lava. The coping is in Portland cement: molded brick might be substituted. The external string courses and internal cornices are patent bricks set in Portland cement with the splayed side outwards.

The mode of fire-proof construction, and the general arrangement of the fittings, are such as have been used in the Model Houses built by the Society for Improving the Condition of the Labouring Classes, to which the Architect of this building also acted as honorary Architect.

In most parts of England, the cost of four houses, built on the plan of this model structure, with ordinary materials, and finished similar to the ground-floor apartments, may be stated at £440 to £480, or from £110 to £120 for each tenement, contingent on the facilities for obtaining materials and the value of labour. Such dwellings, let at 3s. 6d. to 4s. a-week, would, after deducting ground-rent and taxes, afford a return of 7 per cent. on the amount of outlay. Where hollow bricks are obtainable at a fair price, their use ought to effect a reduction of about 25 per cent. on the cost of the brickwork, or equal on these four houses to about £40.

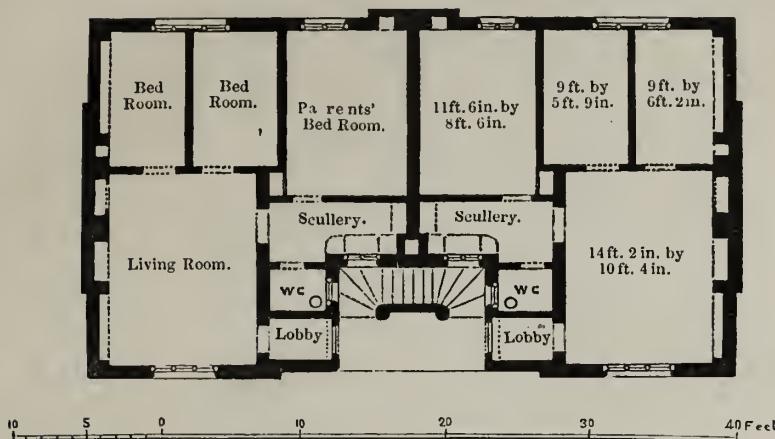
PLAN OF GROUND FLOOR.



A Sink, with Coal Box under.	E Staircase of Slate, with Dust Place under.
B Plate Rack over entrance to Dust Shaft, D.	F Cupboard warmed from back of Fireplace.
C Meat Safe, ventilated through hollow bricks.	G Linen Closet in this recess if required.

Scale of feet.

PLAN SHOWING THE SMALLER BED ROOMS INCREASED IN AREA.



The above Plan is given in order to show how the area of the smaller bed rooms may be slightly increased, by taking 6 inches from the width of the parents' bed room.

If this arrangement be adopted, both cross partitions should be formed in 6-inch No. 6 or No. 7 hollow bricks set in cement, and the iron springer, shown in the lithographed drawings, over the recess in the centre room, will be dispensed with; the floor and roof arches to the two smaller rooms may be turned in separate spans, with 4-inch No. 5 hollow bricks; the arch over the larger room to be in 6-inch No. 6 hollow bricks, a continued springer for the arch being formed over the cupboard recess by a flat stone; the centre of the window which lights the two smaller bed-rooms is to be that of the partition between them.

A statement of the reduction in cost which would arise from the adoption of this arrangement is appended to the estimate.

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It has been deemed unnecessary, in the preceding description, to enter into the details, or to dwell on the practical view of the subject, which will be found in the author's "Essay on the Dwellings of the Labouring Classes."

This work, containing an account, with plans, of the Model Houses referred to at page 10, and numerous designs for Cottages, &c., is published (second edition) by the Society for Improving the Condition of the Labouring Classes, 21, Exeter Hall, Strand, and has been translated and published in French, by order of the President of the Republic. Gide et Baudry, éditeurs, Paris.

## ON THE FORM AND USE OF HOLLOW BRICKS.

THE importance of hollow bricks in the construction of dwellings for the labouring classes, warrants some further remarks on this subject. No one conversant with houses of slight construction can be unaware of the evil to which they are so liable from damp external walls and floors; any remedy which effectually secures its removal, without adding to the cost of the building, must prove a great benefit to the occupants of such dwellings; and where a mode of construction effects this object at a diminished cost, it is a boon to the landlord as well as to the tenant.

The use, in architectural construction, of hollow-shaped clay, in a variety of forms, was known to the ancients, and amongst other purposes was adopted by them in lightening the weight of the spandrels to vaulting of considerable span.

For the lining of rubble-stone walls tile was commonly used in Roman buildings. The Colosseum may be instanced as an example, where much of the inner wall is constructed of rubble and faced with tile, which has been covered with slabs of different coloured marble. At Pompeii, a hollow tile was in some instances used for securing a dry surface to receive the fresco paintings.

In the *Illustrated London News* of October 5, 1850, drawings are given of Roman flue-tiles, found at Lymne, in Kent, where they have been used for distributing warm air from an hypocaustum under the floor of the building.

Hollow bricks are peculiarly adapted for agricultural buildings, and for enclosure, park, or fence walls, as well as for the ordinary dwellings of the labouring classes, for schools, and for houses generally of moderate height, and with the usual weight of roofs and floors, rendering internal battening unnecessary. For conservatories they may be used with singular advantage. Heat may be passed through every portion of both floors and walls. Their strength may be adapted to circumstances, and where necessary be rendered fully equal to that of solid bricks.

When used for partitions, or for roof and floor arches, they are fire-proof, deaden sound more effectually, and are considerably lighter than solid brickwork. As a lining to stone or flint walls, they supersede the necessity for battening, and the consequent risk of fire and dry rot is avoided. For cottage floors they are also well adapted.

The various forms of hollow bricks proposed, prior to that which has been *invented and patented* by the author, are all, particularly in reference to external walls, more or less liable to the objection, that they either will not properly bond together, and form a substantial wall, or else that the headers and the vertical joints afford a medium for the transmission of damp from the exterior to the interior.

By the form adopted in the patent hollow brickwork, a perfect bond, running longitudinally through the centre of the wall, is secured, all headers and vertical joints passing through it are avoided; internal as well as external strength is obtained; and every facility given for the fixing of floor-plates, and other timbers; whilst, by the parallel longitudinal cavities, ample security for dryness is afforded, and great facility presented for ventilation, as well as for the conveyance of artificial heat, and for the transmission of bell-wires, pipes, &c.

According to the specification enrolled 15 June, 1850, this patent includes bricks and tiles, hollow or otherwise, of such form as will secure a "longitudinal bond, whether obtained by the overlapping of the alternate or the parallel courses of bricks, either with a square, a rebated, or a chamfered joint, and with a level, a sunk, or a bevelled bed."

The dimensions of the bricks being unlimited, a size has been chosen which, with the omission of the headers, reduces, by about one-third, the number of joints, and greatly improves the appearance of the work, giving it more boldness of effect and resemblance to stone than that of ordinary brickwork—twelve inches in length, including the joints, three courses rise one foot in height; a size equally convenient for the workmen in the manufacture, and in the use of the bricks—whilst less liable to damage in moving than bricks of larger size, their form admits of ready handling and stowage for transport.

The principle of the patent bond is, however, equally applicable to the ordinary or to any other size of brick.

Nine patent hollow bricks of the size before described will do as much walling as sixteen ordinary bricks, whilst the weight of the former but little exceeds that of the latter, an important consideration in reference to carriage, as well as labour in using.

When passing through the machine, or in the process of drying, any number may be splayed at the ends to the rake of gables, be mitred, or be marked for closures, and broken off as required in use; or they may be perforated for the purpose of ventilation. If nicked with a sharp-pointed hammer, they will break off at any desired line; and the angles may be taken off with a trowel as readily as those of a common brick.

A sufficient proportion of good facing bricks may be selected from an ordinary burning, and in laying them, a much better bond will be obtained than is usually given in common brickwork.

The splayed bricks may be used for the weathering of plinths, for eaves moulding under gutters, and for gable moulding under projecting tiles or slates, in lieu of barge boards. Labels for doors and windows may be made hollow in lengths.

The bricks for the quoins and jambs may be made either solid or perforated; and with perpendicular holes, either circular, square, or octagonal, those in the quoins may be so arranged as to serve for ventilating shafts. Stone will be found equally applicable for the quoins and jambs, and the appearance of the work be thereby improved.

Hollow bricks may be made, with any good tile machine, in the same manner as ordinary draining pipes, and at about the same cost in proportion to the quantity of clay contained in them. The material is finer; they are more compressed, require less drying, and with much less fuel are better burned than ordinary bricks, even when waste heat, or that in the upper part of the kiln, only is used, a fire skin being formed both within and without.

The process of drying is much more rapid than in common brickwork, and the smoothness of the internal surface of walls built with the patent bonded bricks renders plastering, in many instances, quite unnecessary, whereby a saving is effected, not only in the first cost, but also in the subsequent maintenance. If glazed on the outer face, as may be done with many clays, a superior finished surface is obtainable without plaster.

When made under favourable circumstances, the fair selling price of the patent bonded hollow bricks is about one-fourth more than that of ordinary bricks, at which rate, owing to the increase of size, a saving of nearly 30 per cent. will be effected; or if the selling price be one-third more than that of ordinary bricks, the saving effected by their use will be about 25 per cent., with a reduction of 25 per cent. in the quantity of mortar, and a similar saving in the labour, when done by *accustomed workmen*; the cost of carriage also will be considerably diminished.

Licences for making Patent Bonded Hollow Bricks are granted by the Patentee, in consideration of the payment of a royalty proportionate, in case of sale, to their price.

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On testing the strength of six patent bricks of good quality, put together so as to form a pier one foot long, one foot or three courses high, 9 in. wide, the external sides being  $\frac{7}{8}$  of an inch thick, the internal  $\frac{3}{4}$  in. thick, it was found that a weight of  $6\frac{1}{2}$  tons caused a slight crack, only perceptible by sound, which did not increase until  $8\frac{1}{2}$  tons were placed on them. With 9 tons the horizontal beds gave way, the perpendicular sides remaining unbroken, and without any tendency in the bricks to separate.

A 6 in. hollow partition, or arch brick, of good well-burnt clay, 9 in. long, 4 in. thick, the beds  $\frac{3}{4}$  in. and the sides  $\frac{7}{8}$  in. thick, was tested with 7 tons, when it cracked in both beds; and, with eight tons, the brick broke up. Other trials have given a similar result.

A hollow brick of very superior red clay, well burnt, 9 in. long,  $4\frac{1}{4}$  in. wide, and  $2\frac{1}{2}$  in. thick, the sides full  $\frac{5}{8}$  in. thick, cracked slightly with 6 tons, very perceptibly with  $7\frac{1}{2}$  tons, but required 17 tons to *crush* or break it up.

Experimental floor-arches, of 10 feet 3 in. span, turned with hollow bricks 6 inches deep, between two cast-iron springers similar in form to those shown in the drawing of details (Plate 9), and connected by  $\frac{3}{4}$  in. wrought-iron tie rods, 7 ft. 6 in. apart, were loaded with bricks equally distributed over the arch to the extent of 8 tons 13 cwt. 3 qrs., when they broke down through the crushing of the bricks; the deflection of the springer

being  $\frac{1}{2}$  in. In another arch of the same span, with the tie rods 9 ft. 6 in. apart, and loaded with 8 tons 10 cwt. 3 qrs., one of the springers broke; and, on examination, a flaw was found in the casting.

These experiments were made at Messrs. W. Cubitt and Co.'s, Gray's Inn Road; the patent bonded bricks being from the Marquis of Lansdown's Brick Works, Bowood, Wilts; the partition, or arch brick, from Aylesford, Kent.

Under ordinary circumstances, in a dwelling-house of two stories similar in height to that of the Prince's Model Houses, and constructed with hollow brick floors and roof, the weight likely to come on one foot in length of the two lowest courses of 9 in. brick-work, at the ground-floor level, supposing the upper rooms to be full of people, would not exceed  $1\frac{1}{2}$  ton. In a three story building, similarly constructed, the corresponding weight would be about  $2\frac{1}{4}$  tons, and about 4 tons at the door jambs, where the strength of the bricks is proportionately greater.

The weight of 9 in. hollow brickwork, with mortar or cement, included in the above, is taken at 65lb. per foot superficial for every one foot in height of 9 in. wall; with many kinds of clay the weight would be less.

The weight of the 6 in. floor arches is about 37lb. per foot superficial, and the levelling up with concrete adds about 33lb. per foot superficial.

The cast-iron springers for floor and roof arches (Plate 9) weigh 27lb. per foot run, and the tie rods, including heads, screws, &c.,  $1\frac{1}{3}$ lb. per foot run.

PATENT BONDED BRICKS.

No. 1.



No. 2.



QUOIN BRICK.

No. 3.



INTERNAL JAMB AND ANGLE BRICKS.

No. 4 A.



No. 4 B.



No. 4 C.



ARCH AND PARTITION BRICKS.

No. 5.



No. 6.



No. 7.



No. 1. External patent bricks, which, with the quoin brick No. 3, and the jamb brick No. 4, are sufficient for building 9 inch walls.

No. 2. Internal patent bricks required to form any thickness of wall beyond 9 inches.

No. 3. Quoin bricks,  $10\frac{1}{4}$  in. long, with one splayed corner for forming external angles, reveals, and jambs of doors and windows, either square or splayed.

No. 4. For internal jambs and chimney bricks,  $8\frac{3}{4}$  in. long. B and C, show how one or two angles may be chamfered in the process of making by the same die.

No. 5. For  $4\frac{1}{4}$  in. partitions or internal walls, to bond with the splayed bricks, and which also answer for floor and roof arches, not exceeding 7 feet span.

No. 6. For  $5\frac{3}{4}$  in. partitions or internal walls, and arch bricks, used for floor and roof arches of 7 to 10 ft. span.

No. 7. Ditto ditto with webb to give extra strength, and adapt them for using on edge in partitions  $3\frac{3}{4}$  in. thick, to rise in brick courses.

THE SUPPLEMENTARY ELEVATIONS, Nos. 11 and 12, are given with a view to show the adaptation of the peculiar arrangement of the Exhibition Model Houses to buildings of a more extended and lofty character, whether of fire-proof or of ordinary construction. In either case the walls may be of hollow or of solid bricks, but if the floors or roof be arched, hollow bricks should be used for that purpose, in order to combine lightness with strength, an increase of one-third in the depth of the arch being obtainable by the use of  $5\frac{3}{4}$  in. hollow bricks, with less weight than that of a solid brick arch  $4\frac{1}{2}$  in. deep.

For the main internal walls, the hollow partition brick (p. 14, No. 7),  $5\frac{3}{4}$  in. wide, may be used with advantage in houses of ordinary construction; and if, also, the minor partitions are of the No. 5 hollow-brick,  $4\frac{1}{4}$  in. wide, internal wood partitions will be altogether superseded, and timber only be required for the floors and roof; the building being thereby rendered more durable, and the first cost of internal plaster, as well as of subsequent repairs, greatly diminished.

If the external walls be of the patent bonded hollow-brick, the following directions may be useful in building them:—The internal course of bricks should be set first, and quarter bond regularly kept in laying the front bricks, which will bring the joints of each external and internal course central to the one above and below it, whilst all vertical joints passing through the wall will be avoided. If  $\frac{1}{2}$ ,  $\frac{3}{4}$ , and  $\frac{1}{4}$  bricks are provided, or a proportion of the bricks are thus marked, in making, so that they may be broken off true in use, the labour and waste will be much diminished.

The string courses, which serve also for window sills, may be formed by simply turning the splayed side of the external course outwards, and filling in with a partition brick, as shown in the marginal section, which also indicates the arrangement of the wall plates, 4 by  $3\frac{1}{2}$ , cut on the inside to the splay of external brick; or if a partition brick be used externally, the plate may be square.

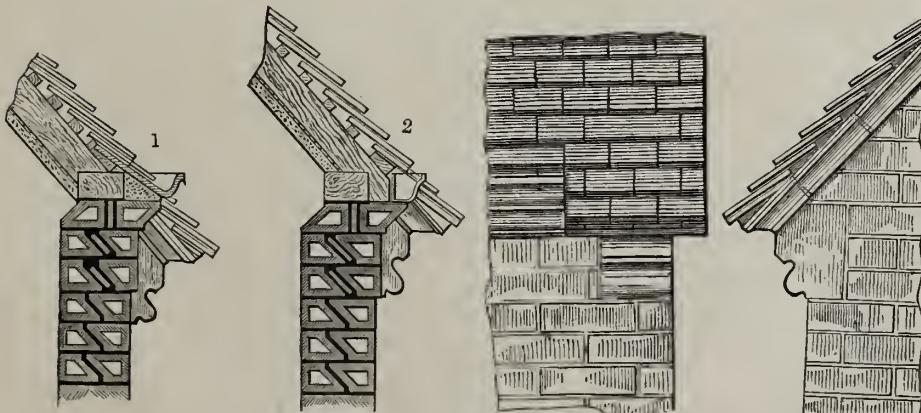
The patent splayed brick may be also used for the moulded string course to the eaves, receiving the gutter, whether in metal or of Mr. Beadon's patent form in tile, as shown at the Exhibition, Class 7, No. 51, and represented in the section below, No. 1. The splayed bricks may be used likewise for the gables, receiving the projecting tile or slate, as shown in the subjoined Elevations and Sections. The abutting bricks to the rake of gables may be splayed in the manufacture, so as to avoid cutting. The angle corbel may be either in stone or moulded clay.



ELEVATION.



PLAN.



SECTIONS WITH EAVES, GUTTER, ETC.  
No. 1. Patent Tile Gutter. No. 2. Metal Gutter.

SIDE AND FRONT ELEVATIONS, SHOWING THE  
EAVES COURSES, AND THE GABLE.

## Specification

### Of Work to be done in Erecting a Block of MODEL HOUSES FOR FAMILIES, containing Four Distinct Tenements.

THE PLANS, ELEVATIONS, AND SECTIONS FOR THE SAID BUILDING ARE TO BE STRICTLY ATTENDED TO FOR FORM, DIMENSIONS, AND ESPECIALLY FOR THE CONSTRUCTIVE DETAIL, AS WELL AS FOR ALL OTHER PARTICULARS THEREIN SET FORTH, SUBJECT ONLY TO SUCH VARIATIONS AS MAY BE RENDERED NECESSARY BY PECULIARITY OF SITUATION, OR OTHER CIRCUMSTANCES, AND WHICH SHALL BE AGREED ON AND DEFINED IN WRITING.

NOTE.—*The items thus marked (\*) must be agreed upon before a Contract can be made.*

#### Excavator.

Dig out the trenches of sufficient depth and width to receive the footings of foundation walls as shown on the sections; fill in and ram to the brickwork when built.

If the ground be sufficiently good and firm for the foundations, the trenches are only to be excavated to the average depth of 1ft., perfectly level and even to receive the brick footings.

\* If the ground be loose, in order to obtain a firm and even foundation, which is *indispensable*, and must be specially observed, the trenches are to be increased in depth and filled up to the footings with a stratum of concrete, not less than 1ft. 6in. thick, and at least 9in. wider than the footings, formed of clean coarse gravel and grey stone lime, in the proportion of eight parts of the former to one part of the latter, well incorporated, and mixed with a due proportion of water, being thrown in from a stage at least 6 ft. high.

\* Excavate for drains, cesspools, tanks, &c., as may be required by the situation.

All the superfluous earth to be levelled round the building, or removed to such part of the ground as may be directed.

All rubbish to be cleared away at the completion of the works.

#### Bricklayer.

The whole of the bricks, whether hollow or solid, are to be of the best quality of their respective kinds, hard burnt, sound, and well-shaped.

The mortar to be composed of fresh stone lime and clean sharp sand, in the proportion of three parts of sand to one of lime, well mixed.

All the cement used, to be the best Roman, unless otherwise specified.

The common stock brickwork to rise four courses to a foot, and the hollow brick-work three courses to a foot precisely, unless otherwise specified.

The footings are to be two courses deep of common stocks, the first course to be 18in. and the next 14in. wide in mortar; the next two courses to be the fair work, also in stocks, on which must commence the hollow brickwork.

A dust bin is to be formed under the staircase with 9in. wall of common stocks or hollow bricks, and of the dimensions shown on the plans, 5ft. deep from the ground floor line to top of footings, at which level a solid brick flat paving must be laid and grouted with cement on a bed of concrete at least 3in. thick.

Where there is any reason to apprehend the rising of damp, a course of strong slate well bedded in cement should be built under the first course of hollow bricks, or a coat of metallic lava,  $\frac{5}{8}$ in. thick, should be laid on.

\* According to agreement, to be noted at the foot of this Specification, the walls are to be built either with the patent bonded hollow bricks or with good stock bricks.

If hollow bricks are used, the constructive details must be in strict conformity with those given in the plans, elevations, and sections. The external walls having the inclined face of bricks set outwards, and at the string courses the internal backing up to be in 6in. partition bricks. (See further instructions, p. 15.)

All the walls are to be of the height and thickness shown on the drawings, great care to be taken in carrying them up perpendicularly and horizontally.

The external and the 9in. internal walls, with the 6in. partitions, are to be built in mortar. The 4in. partitions are to be set in cement with two tiers of hoop iron bond, properly connected at the angles.

All window and door arches, and the large arch over staircase recess are to be cut and set in cement, and tuck pointed; also, all external strings to be in cement.

Two courses throughout, immediately under the ground floor level—viz., the upper course of common stocks and the first course of hollow bricks, are to be set in cement with two rows of strong hoop iron bond laid in between them. Three courses all round the building, at the first floor and roof levels, commencing with the sailing course under the springings of arches, and including the 9in. and 6in. internal walls to be set in cement with two rows of strong hoop iron bond laid in on top of second course.

Great care must be taken to securely connect the hoop iron bond at all the angles and cross walls, and the overlaps to be turned at least 12in. long.

The smoke flues are to be carried up as shown on the drawings, 9in. square when finished, properly pargetted and cored; or they may be circular, 10in. diameter.

26 cast-iron air bricks and 48 ventilating valves will be supplied by the proprietor, and must be allowed for and built in by the contractor in such places as shall be directed, to communicate with the smoke flues and warm air chambers behind the living-room fire-places, also with the external atmosphere, and air flues of an average length of 2ft. to be formed through the hollow bricks to each.

Form a dust-shaft 14in. by 9in. in the clear, well rendered with cement, and left perfectly smooth. The shaft to be commenced 2ft. 8in. below the ground-floor line in the situation shown on the drawings, and carried up at least 4in. above the finished surface of the roof for ventilation to the dust-bin, &c.; this shaft is to serve also for the transmission of the water supply, service, and waste pipes.

Cast-iron abutment springers are to be built in the external walls, and connected with wrought iron tie rods through the building. The end tie rods are to pass through a course of the hollow bricks.

The upper floors and roofs are to be formed of hollow brick arches, turned in cement on proper centering. They are to be 6in. deep over the living-rooms, parents' bed-rooms, and staircase, and may be 4½in. deep over the small bed-rooms, lobbies, and water closets. Special care must be taken to have the centering sufficiently strong and well shored up, in order to prevent the slightest settlement or deflection taking place while the arches are being turned, and the centres are not to be removed under eight or ten days after their completion.

The floor arches are to be levelled up with concrete, averaging 4in. thick, properly prepared to receive cement or lava flooring. The roof arches are also to have a levelling of concrete, averaging 6in. thick, laid to a fall of at least 1½in. to 10ft., and properly prepared for, and covered with, a coat of metallic lava, at least ¾in. thick, with a skirting all round, averaging 5ft. high, turned into joint of brickwork.

\* If any of the floors are to be boarded, the concrete must there be omitted (for description, *see* Carpenter's Work), and if boarded on ground-floor, air-bricks must be built in for ventilation.

The chimney stacks above the roof are to be carried up to the height, &c., as shown on the drawings. The bases and caps are to be formed of splayed bricks set in cement.

The external work to be of an uniform colour, carefully selected, with neat flat drawn joints.

The walls to the whole of the interior are to be worked fair for colour or limewhite.

The soffit of the floor and roof arches are to be cleaned, and prepared for whiting.

\* According to agreement, and if the nature of the soil and locality be sufficiently dry, the ground-floor may be laid with hollow bricks, dowelled at the heading joints, or the ordinary paving tiles, bedded in cement on a layer of concrete 4in. thick. If arches are used, the skewbacks must be formed on the upper course of footings in cement.

The area to staircase to be covered with the gravel lava on a bed of concrete 6in. thick.

All the door and window frames to be built in and pointed, with good hair mortar.

Form ornamental gables with ramps, &c., on front parapet, and similar ramps to the chimney stacks, as shown on the drawings.

Form hollow brick corbels or sailing courses 12in. long, to receive end of steps to staircase against main wall.

The newel wall to staircase to be built according to drawings with hollow bricks in cement, and 4in. corbel stone or brick caps to piers, and to receive lintels.

Hollow brick lintels to be formed over all internal, and the inside of external doors, also over the 4ft. 3in. recesses in living rooms, by passing 1 $\frac{1}{4}$ in. T iron bars through the hollow of bricks, and grouting the same solid with cement. Two bars are to be used in the 9in. walls, and one in the 4 in. partition walls, each to be 12in. longer than the respective opening. The latter of these lintels may be dispensed with if desired.

The chimney pieces in the living-rooms to be formed of hollow bricks with small chamfered angles or arrises, the jambs to be 9in. wide and to project 4 $\frac{1}{2}$ in. The mantel to be 4 $\frac{1}{2}$ in. deep, and project 4 $\frac{1}{2}$ in., set in cement. The mantel to have 1 $\frac{1}{4}$ in. T iron passed through hollow of bricks, and grouted solid with cement, the shelf to be of slate as described in Slater's Work.

A dust door, or valve, to be built in under the slate shelf adjoining the sink in each scullery, and a proper shoot to be formed with bricks in cement leading into the shaft, well rendered in cement and left perfectly smooth.

Set the grates in the living and bedrooms. Those in the living-rooms are to have hot-air chambers formed behind them.

\* Lay in a sufficient quantity of 4in. and 6in. glazed drain pipes with socket joints set in cement, to convey soil and waste from water-closets and sinks to the sewer.

\* If there be no sewer in the immediate vicinity, a cesspool must be formed 8ft. deep from the overflow, and 5ft. clear diameter in 6in. hollow bricks on end, or in two half-brick rims, the outer one set in mortar, the inner one in cement, the bottom brick flat and two courses plain tiles set in cement. The whole to be rendered with cement and doomed over, with manhole in centre, covered with a strong stone. An overflow drain, with proper siphon trap, to be laid from the cesspool to some convenient escape.

#### Mason.

Provide and fix in cement 4in. tooled and splayed York templates to ends of all the cast-iron girders and springers of the sizes necessary to secure perfect bond with the patent bonded hollow bricks.

\* Provide and fix to all internal walls in cement 3in. tooled York springers 14in. wide, chamfered both edges for floor and roof arches, unless they be of brick in cement.

Provide and fix 3in. ditto ditto 8 $\frac{1}{2}$ in. wide, built in over entrance doors and water-closets in walls against staircase, to receive narrow arches over lobbies and water-closets.

Provide and fix three pinnacles in Portland cement, Caen or Bath stone, moulded according to drawing, and set same in cement to ornamental gables in front.

Provide and fix to all the ground-floor windows, and those in the staircase, tooled York sills, properly sunk, weathered, and throated, 11in. wide and 4in. thick, with back edges fair tooled for inside, and grooved on top for metal tongue in oak sill.

\* In localities where there is any difficulty in procuring stone for window-sills, &c., they may be formed of hollow jamb bricks, 10 $\frac{1}{2}$ in. long, set in cement, to project 1 $\frac{1}{2}$ in. with the splay upwards, and on a slight inclination to form weathering or drip for water.

Provide and fix 2 $\frac{1}{2}$ in. tooled York back hearths to all the fireplaces; also, 2in. rubbed York slabs to the same, 1ft. 6in. wide, and 1ft. 6in. longer than their respective openings. The latter may be dispensed with if the floors are in Portland cement.

#### Slater.

The staircase is to be of 1 $\frac{1}{2}$ in. slate treads and 1in. risers. Winders top and bottom, as shown on Drawings, with rounded nosings, and the risers grooved into treads both edges. The treads are to be set on corbels built out of the brickwork for that purpose on the wall side, and to be built 2 $\frac{1}{2}$ in. in the newel wall. The upper winders are to be suspended with proper irons 1 $\frac{1}{2}$ in. by  $\frac{1}{2}$ in. over the window arches,

the whole to be well put together with good cement, and left perfectly clean at the completion of the building.

Provide 1½in. rubbed slate steps and risers 12in. wide and 5in. high, morticed for door frames, with rounded nosings, and properly bedded in cement.

Provide and fix 1½in. rubbed slate landing in one piece, built in the walls at each end, and resting on cast-iron girder one side, and the other on the newel wall of staircase, forming a gallery of communication to the upper houses.

Provide a cistern of 1½in. slate, properly grooved and bolted together with oil cement in joints, to contain not less than 250 gallons, and fix the same on the roof raised on hollow brick piers 8in. high over the ventilating shaft from dust-bin; cut all necessary holes for the Plumber for pipes.

Provide in each scullery a sink of 1in. slate 2ft. 4in. by 1ft. 4in., inside dimensions, with tops, sides, and fronts to coal-box underneath, all the arrises to be either chamfered or rounded off, the whole to be made in strict conformity to the drawings, put together with screws and nuts and oil cement, and fixed in the most secure manner.

*Note.*—These sinks can be provided ready made in slate or cast iron, including the fittings to coal-box underneath, and will only require fixing.

Provide and fix three ¾in. rubbed slate shelves in each safe—the bottom shelf to have rounded edge. These shelves are to be kept ½in. from the back wall for the purpose of ventilation.

Provide ½in. rubbed slate blanks for the centre compartment in each of the three light windows to the small bed rooms. (For fixing, see Carpenter's, &c., Work).

Provide and fix 1¼in. rubbed and rounded slate mantel-shelf over the fireplaces in each living-room 7in. wide in the clear, and to project 3in. at each end, the corners to be rounded. These shelves must be built in the wall at least 3½in., and fixed as the work is carried up.

#### Plasterer.

Twice white or colour all the ceilings and walls throughout the building internally.

The whole of the first floor is to be laid with patent Portland cement, at least 1in. thick, properly floated and finished with a trowelled face on a levelling-up of concrete, as described in Bricklayer's Work.

\* The ground-floor is to be laid with hollow bricks bedded in cement, dowelled at heading-joints on concrete, 4in. thick. (See Bricklayer's Work.†)

\* The coping to the parapet to be in Portland cement 12½in. wide, 3in. thick, properly weathered and throated both edges, and cored out with two courses of plain tiles in cement, to be continued round the ramps, &c., to gables in front, and to end chimney stacks. Jamb bricks, No. 3, in cement, may be used for the coping where preferred.

Properly weather with Portland cement all external strings and sailing courses.

† In some parts of the country, lime and sand floors are very much used, and found to last, when well made, upwards of forty years. The following description of the mode of working them may be useful: A foundation or substratum should be prepared, about six inches thick, with coarse gravel or brickbats, and lime core, well beaten to a level surface; in damp situations tar may be added to this concrete, on which is to be laid the lime and ash floor, thus prepared: Take good washed sand, free from all earth and small stones, together with the ashes of lime, fresh from the kiln, in the proportions of two-thirds of sand and one-third of lime-ashes. (Where obtainable, the substitution of one-third portion of smiths' ashes, or powdered coke, for one-half of the sand, increases the durability and hardness of the floor.) Mix the sand and lime-ashes well together, and let them remain in a body for a fortnight, in order that the lime may be thoroughly slaked; then temper the mortar, and form the floor with it, three inches thick, well floated, and so worked, that it be not trodden on until it has laid for three days; it should then be well rammed for several successive days, until it becomes hard, taking care to keep the surface level; after that, use a little water and smoothe it with a trowel; keep the floor free of dirt, and when perfectly dry it may be rubbed over twice with linseed oil, which gives the appearance of stone instead of sand.

The price paid for such floors is about 6d. per yard for labour, and 8d. per yard for materials.

### Carpenter and Joiner.

All the timber and deals used are to be of good quality, free from sap, shakes, large, or dead knots.

Provide all centering for floor and roof arches, and turning pieces to apertures.

\* If any of the floors are boarded on the arches, they must be of 1in. yellow deal straight joint, well nailed to joists 2in. by 2in., cut out 1in. to fit the crown or curve of arch, notched and nailed on sleepers 3in. by 2in. The joists not to exceed 12in. apart.

Provide and fix proper solid, wrought, rebated, and chamfered window frames, and mullions of deal 4½in. by 3in. with oak sunk, weathered and throated sills, grooved on underside for metal tongue in stone sill, 1¼in. staffbead or ¼in. double chamfered fillet, 2½in. wide mitred round inside to stop joint of brickwork.

† The living-room window frames in three lights are each to have a galvanized wrought-iron casement, hung in the centre compartment with hinges, turnbuckle, and proper stay-bar fastenings, the other two compartments to have **T** iron cross bars, properly fixed across the centre to divide each light into two squares.

The three light window frames to the small bed-rooms to have the centre compartments blanked with ½in. rubbed slate, properly bedded and screwed therein; the other two compartments in these windows to have casements hung as those in the living-rooms.

One casement of the same description to be hung in each of the two-light window frames to the parents' bed-rooms; the other light in each window to have **T** iron bar fixed across the centre as before.

The sculleries are to have two-light window frames divided into two squares high, as those to living-rooms; the upper square of one compartment in each window to be provided with an iron frame or casement hinged on **T** iron cross bar, to open downwards with iron rack fastening complete.

The water-closets to have one-light window frames divided into two squares, the upper one being in an iron casement hung to **T** iron cross bar, with rack fastening as to sculleries. (For Glazing, *see* Glazier's Work; and for Iron Casements, &c., *see* Smith.)

The entrance doors to be 1½in. square framed, filled in with ¾in. wrought, tongued and beaded boards, with panel 8in. deep, formed at top for glass to be stopped in with beads, hung with 3½in. butts to solid, wrought, rebated, and chamfered frames, 4½in. by 3in. A ¾in. chamfered fillet, 2½in. wide, to be nailed round inside of frame to stop joint of brickwork. Fix a 9in. rim lock, one 9in. barrel bolt, one pair of ornamental straps, and ditto escutcheon to keyhole, to each door.

The dusthole under stairs to have a 1in. proper ledged door, hung with 3in. butts to proper, solid, wrought, and rebated frame, 4½in. by 3in. dowelled into slate sill, and to have a 6in. dead lock.

The internal doors to be 1½in. square framed, four panels, hung with 3in. butts to 1½in. wrought, rebated, chamfered, and staffbeaded linings; those in the 9in. walls to be 6½in. wide, and those in the 4in. partitions to be 3½in. wide. The staffbeads to be mitred round on one side (*see* Drawing), and one bow latch to be fixed to each door.

A cupboard to be formed in the 14in. recess in each living-room, with 1½in. deal framed fronts and square framed doors in two heights, hung with 3in. butts, and to have lock, knobturnbuckle, &c., fixed complete, each cupboard to be provided with four 1in. shelves, wrought and fixed on proper bearers.

A closet in each of the parents' bed-rooms to be formed as shown on the drawing, with 1½in. framed fronts, and 1½in. square framed 4in. panel doors, to correspond with room doors, hung with 3in. butts, and to have good lock, knobturnbuckle, &c., fixed complete. Provide and fix in each of these closets a ¾in. double chamfered hook rail, 3½in. wide, with No. 4 iron hat and cloak pins screwed thereon.

† If ornamental casements be adopted, they are to have zinc bars with galvanized wrought iron frames, as are shown in the elevations.

A safe is to be formed in each scullery, as shown on the drawing, with  $1\frac{1}{4}$  in. framed fronts, and doors hung with 3 in. butts, and to have knobturnbuckle, &c., fixed complete. One  $\frac{3}{4}$  in. deal wrought end 14 in. wide, to be provided and fixed to each, with fillets screwed on to receive  $\frac{3}{4}$  in. slate shelves. A box ventilator, fitted with perforated zinc and valve, to be let in these ends. (For Shelves, *see* Slater's Work.)

A plate rack is to be provided and fixed in each scullery, over one end of the sink, 3 ft. high, 1 ft. 6 in. wide, and 8 in. deep, framed in three heights and covered with  $\frac{1}{2}$  in. rounded top.

A  $1\frac{1}{4}$  in. deal frame clamped table top, 4 ft. 6 in. by 2 ft. 6 in., to be provided in each living-room, hung with  $3\frac{1}{2}$  in. butts to the window board, to fall down or turn up against the window to form shutter. Deal framed angle brackets, hung in proper frame, or to 1 in. grounds, 3 in. wide, securely fixed to the wall to support the flap when used as a table. A 4 in. neck bolt to be screwed to the window mullion, to secure the flap when used as a shutter.

The following 1 in. deal wrought shelving, 9 in. wide, to be provided and fixed on  $\frac{3}{4}$  in., chamfered all round, hook rail  $3\frac{1}{2}$  in. wide, and plain wrought iron brackets.

The scullery in each house to have 9 ft. 5 in. of shelving in two lengths, fixed on one side and end with the same length of hook rail, and one iron bracket. 5 ft. of shelving in each of the small bed-rooms over the doors, with 2 ft. 6 in. run of hook rail, and two iron hat and cloak pins screwed thereon. 9 ft. 6 in. of shelving in each of the parents' bed-rooms over the doors, with 5 ft. of hook rail, one iron bracket, and three iron hat and cloak pins screwed thereon. Two hook rails in each living room, level with the top of doors, one 3 ft. and the other 4 ft. 6 in. long.

A  $\frac{3}{4}$  in. hook rail as before, 3 ft. 6 in. long, with three iron hat and cloak pins screwed on, to be fixed in each entrance lobby.

### Smith and Founder.

Provide and fix a cast iron girder,  $7\frac{1}{2}$  in. deep,  $\frac{7}{8}$  in. thick, with bottom flanges 3 in. wide on the inside to receive slate landing, top flange to be 2 in. wide,  $1\frac{1}{2}$  in. deep, chamfered both upper edges, to project  $\frac{1}{2}$  in. full on either side, and to have 9 in. bearing on the walls at each end, properly calked and bedded on lead seating laid on stone template.

Provide and fix cast iron railing across the staircase opening, and on the cast iron girder, 3 ft. 3 in. high, as shown on the Drawings.

Provide and fix cast iron railing on staircase landing, over newel wall, with  $\frac{3}{4}$  in. round bars 4 in. apart,  $\frac{7}{8}$  in. square bottom rail 3 in. up from slate, and a flat round top rail 2 in. wide,  $\frac{3}{4}$  in. thick, with one cast iron plain newel capped with top rail, and securely fixed to slate landing by means of screw and nut.

Provide and fix cast iron springers in external walls to receive floor and roof arches, in two lengths, coupled and bolted together in the middle with  $\frac{1}{2}$  in. bolts and screws. These springers are to be cast as shown in the Drawings.

Provide and fix four  $\frac{3}{4}$  in. wrought iron tie-rods to each floor and roof with heads, screws, and nuts, coupled on each main cross walls, properly let into stone springers, to tie in the roof and floor arches through the building; these rods are not to be placed more than 7 ft. 6 in. apart, excepting over the back rooms; the tie rods at ends of springers are to pass through the hollow part of bricks in the outer walls as shown in section.

Provide three suspension irons  $1\frac{1}{2}$  in. by  $\frac{1}{2}$  in., to support three upper winders in staircase, one 19 in. long, another 12 in. long, and the other 9 in. long, turned at each end, and let into brick and under the slates. (For fixing, *see* Slater's Work.)

Provide 16 galvanized wrought iron casements, with one **T** iron cross bar in each, for living-room and bed-room windows, with brass butt hinges, turnbuckle, and stay-bar fastenings complete—size, 4 ft.  $1\frac{1}{4}$  in. by 1 ft.  $3\frac{1}{2}$  in. opening in rebate to wood frame.

Provide No. 12 **T** iron cross-bars, with ends turned to let in and screw to wood frames of living-room and bed-room windows 1 ft. 4 in. long.

Provide No. 3 ditto casements for scullery windows, 1 ft.  $5\frac{1}{4}$  in. by  $11\frac{1}{8}$  in., hinged to **T** iron cross bars, prepared at each end to let in and screw to wood frame, and to have proper iron rack fastenings over centre. No. 1 ditto casement for scullery, window under the staircase, 1 ft. 3 in. by  $11\frac{1}{8}$  in., hinged as last, &c.

Provide No. 4 **T** iron cross-bars, prepared at ends as last,  $11\frac{1}{2}$ in. long for scullery windows in the compartments without casements.

Provide No. 4 ditto casements similar to those in the sculleries for the water-closets, 1ft.  $5\frac{1}{4}$ in. by  $11\frac{1}{2}$ in., hinged to **T** iron cross-bars, &c.

The whole of the iron in connexion with these casements and bars to be of good quality and galvanized. (For the fixing of these casements and bars, *see* the Carpenter's and Joiner's Work.)

*Note.*—The whole of the above galvanized iron casements and **T** iron cross-bars, &c., can be supplied ready for fixing.

#### \* **Furnishing Ironmongery.**

Provide No. 18, 12in. air bricks, and No. 8, 4in. ditto.

Provide, also, No. 16, 12in., and 16, 7in. wall-ventilators; 12, cornice ditto; and No. 4, box ventilators with valve for the safes in sculleries. Also, No. 4, dust doors to be fixed in the sculleries. (For the fixing, *see* Bricklayer's Work.)

Provide and fix two strong plain scrapers, let into stone blocks.

A 9in. strong two-bolt iron rim lock is to be provided for each entrance door, with proper box staples and large iron knob handles.

One pair of ornamental straps and one keyhole escutcheon to be provided for each entrance door, and also one 9in. strong barrel bolt.

All the internal doors are to have 4in. bow latches, with night bolts and brass knob furniture, except the doors leading into the sculleries, which are to be without night bolts. A 6in. dead lock to be provided for the dust-hole door under stairs.

Provide for the living-rooms four Nicholson's prize cottage ranges, and for the eight bed rooms, stoves with fire-brick back and cast-iron fronts by the same maker, whose address is Newark-on-Trent.

*Note.*—The fixing of the locks, bolts, latches, &c., is included in the Carpenter's and Joiner's Work.

#### **Plumber.**

Provide 24lbs. of 4lb. lead for seatings to cast iron girder and springers.

The water-closets are to be fitted up with Ridgway and Co.'s earthen pans; the water is to be laid on with  $1\frac{1}{4}$ in. iron gas pipe and the supply regulated by Dann's improved valve, with strong iron chain or rod, pull, and handle. These closets are to be connected with the junctions cast on the stack or soil-pipes for the purpose, if necessary, with a short length of 4in. lead socket pipe, and made good with red-lead cement. The pans must be firmly fixed to the floors by means of screws bedded head downwards in the cement floors, and the other ends to be provided with nuts to secure the pans.

The water to be laid on to the cistern with  $\frac{3}{4}$ in. iron gas pipe, and Dann's improved ball valve. The cistern to be provided with a trumpet-mouthed overflow pipe, with 1in. washer and waste.

The water to be laid on to the sinks with  $\frac{3}{4}$ in. iron gas pipe, with all necessary bends, elbows, and connexions, and each to be provided with a  $\frac{1}{2}$ in. round water-way brass cock. These pipes are to be branched from the  $1\frac{1}{4}$ in. service-pipes to the water-closets.

\* Provide and fix to each sink one of "Lowe's" patent brass grates and traps, with 2in. lead waste pipe conveyed to a main pipe down one angle of the dust shaft into the drain, unless cast-iron sinks are used, and have Lowe's traps fitted to them.

Provide and fix 2 stacks of rain water and soil pipes 4in. clear diameter, with proper junctions for water-closets and heads, &c., complete.

#### **Glazier.**

Glaze the windows with good 21oz. sheet glass, properly bedded with good putty in the wood frames and iron casements, except those in the staircase to the sculleries and water-closets, which are to be glazed with  $\frac{1}{4}$ in. rough plate glass properly bedded, &c. All the wood and iron work to be thoroughly primed before the glass is put in. Clean and leave in perfect repair the whole of the glass at the completion of the works.

The upper panel in the entrance doors to be glazed with  $\frac{3}{4}$ in. rough plate glass, bedded and stopped in on both sides with beads.

**Painter and Stainer.**

Properly prepare and paint three times, in good oil colour, all the cast iron springers, girder, tie-rods, and railings, all piping and other iron work; the first two coats to be red lead and the other stone colour. The railings and all exposed iron work to have one extra coat of stone colour or such plain colour as may be directed.

Properly prepare, stop, and stain, in imitation of oak, and once varnish all the internal and external wood work.

The whole of the work before described or referred to, with everything necessary for completing the Model Houses, according to the full intent and meaning of the plans, although not particularly specified, must be done by the Contractor in a good and workmanlike manner. He is to find all requisite materials and implements, with scaffolding, &c., and to deliver up the building, free from all rubbish, in a complete and perfect condition, and keep it in the same at his own expense for twelve months after its completion, excepting any damage which may be done by the Tenant.

No extra works are to be charged for, but such as are agreed upon at the time, and an order in writing given to the Contractor. The value of all extra work or omissions, or any other deviation from the specification or drawings, which may be directed by an order in writing, is to be ascertained and determined by some competent architect or surveyor, selected by the Employer, and his decision thereon is to be final and conclusive.

*Statement of the Number of Hollow Bricks required in Building the Model Houses for Four Families.*

NOTE.—The No. of Bricks refers to the Drawing, page 14; and in the quantities due allowance is made for waste.

Of No. 1.—External Patent Bonded Hollow Bricks . . . . .	18,500
Of which 850 should be cut in or marked for halves, 850 in three quarters and quarters; 250 to be mitred at one end for angles to strings, chimney bases, and capping.	
Of No. 2.—Internal Patent Bonded Hollow Bricks . . . . .	4,870
Of which 175 should be cut in, or marked for halves, 150 in three quarters and quarters.	
Of No. 3.—Quoin and External Jamb Bricks, 10 $\frac{1}{2}$ inches long . . . . .	2,450
Ditto           ditto           7 $\frac{1}{2}$ "           . . . . .	100
Ditto           ditto           4 $\frac{1}{4}$ "           . . . . .	400
Of No. 4.—Internal Jamb and Angle Bricks, Square, 9 inches long . . . . .	1,500
Ditto           ditto           both angles canted   "           . . . . .	430
Ditto           ditto           one angle           "           "           . . . . .	670
Ditto           ditto           ditto           "           5 $\frac{1}{4}$ "           "           . . . . .	480
Of No. 5.—4 $\frac{1}{4}$ inch Partition and Arch Bricks, 11 $\frac{3}{4}$ inches long . . . . .	3,100
Of which 100 should be cut in or marked for halves, and 50 in thirds..	
Of No. 6.—5 $\frac{3}{4}$ inch Partition and Arch Bricks, 11 $\frac{3}{4}$ inches long . . . . .	5,800
Of which 200 should be cut in or marked for halves, and 100 in thirds.	

## Estimate

*Of the several Works required to be done in Building MODEL HOUSES  
FOR FOUR FAMILIES, according to the Plans and Constructive  
Detail of those erected by H.R.H. PRINCE ALBERT, in Hyde Park.*

### Excavator and Bricklayer.

Yds.	ft.	in.		@	£	s.	d.
22	0	0	Cube excavation and levelling ... ... ... ... ...	6d.	0	11	0
			*Cube concrete of good clean gravel and gray stone lime, well mixed together, in the proportion of 8 parts of the former to 1 of the latter, if necessary, about 35 yards				
12	0	0	*Run 4in. glazed earthen drain pipes, with bends and junctions, and including digging and laying the same with socket joints, well bedded in cement, (required length to be ascertained) ... ... ... ...	8d.	0	8	0
20	0	0	*Run 6in. ditto ditto ditto ditto ...	10d.	0	16	8
			*No. 1. Cesspool 8ft. deep from the overflow, and 5ft. clear diameter formed with 6in. hollow bricks on edge or in two half brick rims, the outer one set in mortar, the inner one with the bottom of brick flat and two courses plain tiles in cement. The whole to be rendered with cement, and doomed over with manhole in centre, covered with a strong stone. A 6in. glazed overflow drain with proper syphon trap to be formed and carried to some convenient escape, (this will not be required if there be good drainage.)				
Rods.	ft.	in.					
1	73	0	Superficial reduced common stock brickwork in foundations, the first or lower course to be 18in. wide, the next or second course to be 14in. wide, with two courses fair work on same, and including 4 feet extra depth for dust bin under stairs ... ... ...	£8 15s.	...	11	2 6
Yds.	ft.	in.					
377	4	0	Superficial 9in. reduced hollow brick external walling, in mortar, with neat flat drawn joint, worked fair for colour inside, and including all strings and sailing courses, as shown on the elevations and sections, which are to be set in cement ... ... ...	3s. 4d.	...	62	18 4
5	0	0	Ditto ditto set in cement ... ... ...	5s.	...	1	5 0
80	0	0	Superficial ditto ditto, internal walling, worked fair for colour or limewhite, and including sailing courses as before ...	3s. 4d.	...	13	6 8
29	2	0	Superficial 6in. hollow-brick partitions in mortar, worked fair for colour, sailing courses as before ...	2s. 6d.	...	3	13 1
114	4	6	Superficial 4in. ditto ditto in cement, ditto for colour, but without sailing courses ...	2s.	...	11	9 0
140	6	0	Superficial 6in. ditto ditto, floor and roof arches turned in Roman cement, and including centering, &c. ...	3s. 10d.	...	26	19 2
56	0	0	Superficial 4in. ditto ditto ditto, and including ditto over small bed rooms, lobbies, and water closets ...	2s. 8d.	...	7	9 4
111	0	0	Superficial concrete, average 6in. thick, laid to a fall and floated to receive metallic lava on roof arches ...	1s. 2d.	...	6	9 6
95	0	0	Superficial ditto ditto 4-in. thick, and properly levelled on arches to receive Portland cement, lava, or tile floors ...	9½d.	...	3	15 2
			Carried forward ... ... ...		150	3	5

Yards.	ft.	in.	Brought forward	@	£	s.	d.
			... ... ... ...		150	3	5
118	0	0	Superficial metallic lava laid on roof, and including skirting about 6in. high	3s. 9d.	22	2	6
5	6	0	Superficial gravel lava and concrete 6in. thick at foot of staircase between lobby doors	4s. 6d.	1	5	6
2	0	0	Superficial brick flat paving, grouted with cement, to dust bin, on concrete 3 inches thick	2s.	0	4	0
190	0	0	Superficial cleaning off and preparing soffit of floor and roof arches for limewhite	4d.	3	3	4
112	4	0	Superficial cut and tuckpointed window and door arches, and including the large arch over staircase opening	2 $\frac{1}{2}$ d.	1	3	5
98	0	0	Superficial extra only for cement (instead of mortar) to $\frac{1}{2}$ brick arches over windows, doors, and archway to staircase	1 $\frac{3}{4}$ d.	0	14	3 $\frac{1}{2}$
16	0	0	Run labour to circular cutting 9in. wall to back of arch over stairs	3d.	0	4	0
23	0	0	Run ditto ditto 9in. wall to ramps for coping	3d.	0	5	9
429	0	0	Run extra only for cement and two rows hoop iron bond round building, three courses high at floor and roof levels, including cross walls	1 $\frac{1}{2}$ d.	2	13	7 $\frac{1}{2}$
215	0	0	Run ditto ditto ditto two courses high, to foundation, as specified	1d.	0	17	11
153	0	0	Run 1 $\frac{1}{4}$ in. T iron, in No. 33 pieces, passed through hollow of bricks, and grouted solid with cement, to form lintels over internal doorways	4d.	2	11	0
No. 3. Chimney shafts, each 6ft. 8in. high, with 4 flues, containing about 67ft. superficial of reduced (or 14in.) work in mortar, including bases and caps, either moulded or cut, and set in cement. The whole finished with neat flat drawn joints							
£4 ... 12 0 0							
No. 50. Labour cutting skewbacks and mitres to window and door arches							
2d. ... 0 8 4							
No. 4. Chimney pieces formed with hollow bricks, having chamfered angles, jambs 9in. wide and 4 $\frac{1}{2}$ in. projection; mantle, 4 $\frac{1}{2}$ in. deep and 4 $\frac{1}{2}$ in. projection, with 1 $\frac{1}{4}$ in. T iron passed through hollow of bricks, and grouted solid with cement. The shelf to be of 1 $\frac{1}{4}$ in. rubbed and rounded slate, 7in. wide in the clear, with rounded corners, the whole fixed, complete, and painted							
8s. ... 1 12 0							
No. 24. Door and window frames bedded and pointed in hair mortar							
1s. ... 1 4 0							
Coring to No. 12 flues and dust-shaft provided for by measuring work solid.							
No. 26. Labour only to fixing air bricks and forming flues, average length, 2 feet							
4d. ... 0 8 8							
No. 48. Ditto ditto ditto internal ventilators							
4d. ... 0 16 0							
No. 4. Ditto ditto ditto dust-doors under sinks							
1s. ... 0 4 0							
No. 4. Ditto, and materials to do., ranges in living rooms							
12s. 6d. ... 2 10 0							
No. 8. Ditto ditto stoves to bed rooms							
5s. ... 2 0 0							
<hr/>							
£206 11 9							

**Mason.**

No. 2. 4in. tooled York templates, 1ft. 6in. by 1ft. 6in., with one corner splayed off and bedded in cement, for iron girder to landing of stairs	3s. 7 $\frac{1}{2}$ d.	0	7	3
No. 8. 4in. ditto ditto 1ft. 3in. by 1ft. 3in., for cast iron springers, with splay edges, to work in with the hollow bricks, and bedded in cement	3s. 6d.	1	8	0

Carried forward ... ... ... ... ... ... ... ... 1 15 3

		@	£	s.	d.
Brought forward ...	...	1	15	3	
No. 8. 4in. ditto ditto 1ft. 6in. by 1ft. 3in., splayed and bedded in cement under ends of short cast-iron springers	...	4s.	1	12	0
†No. 6. 3in. tooled York springers for arches, 16ft. long 14in. wide, with both edges splayed, bedded in cement, properly cramped at heading joints, and No. 4 cross grooves in each, to receive tie rods...	...	16s.	4	16	0
No. 4. 3in. ditto ditto ditto 7ft. 4in. long, 8 $\frac{1}{2}$ in. wide, for lobby and water-closet floor and roof arches, and bedded in cement in wall next staircase	...	4s. 6d.	0	18	0
No. 4. Ditto ditto 8ft. long, over small bed rooms	...	6s.	1	4	0
No. 3. Portland cement, Caen or Bath stone moulded pinnacles, and fixing same in cement	...	12s. 6d.	1	17	6
‡No. 4. Tooled York window sills, 11in. by 4in., sunk, weathered, throated, and grooved on top for lead tongue in oak sill, 5ft. long...	...	10s.	2	0	0
No. 2. Ditto ditto ditto 3ft. 6in. long	...	7s.	0	14	0
No. 5. Ditto ditto ditto 2ft. 9in. long	...	5s. 6d.	1	7	6
No. 4. Ditto ditto ditto 1ft. 9in. long	...	3s. 6d.	0	14	0
No. 4. 2 $\frac{1}{2}$ in. tooled York back hearths to living rooms, 3ft. 2in. by 1ft. 2in.	...	2s. 6d.	0	10	0
No. 4. 2 $\frac{1}{2}$ in. ditto ditto for bed rooms, 1ft. 2in. by 1ft. 2in.	...	11d.	0	3	8
No. 4. 2 $\frac{1}{2}$ in. ditto ditto, 9in. by 9in.	...	6d.	0	2	0
No. 4. 2in. rubbed York slab to the living rooms, 4ft. 8in. by 1ft. 6in.	...	7s.	1	8	0
No. 4. Ditto ditto bed rooms, 2ft. 8in. by 1ft. 6in.	...	4s.	0	16	0
No. 4. Ditto ditto ditto 1ft. 11in. by 1ft. 6in.	...	3s.	0	12	0
NOTE—These 2in. slabs may be dispensed with if Portland cement floors are used.					
No. 2. Iron scrapers and stones, letting in and running with lead, and fixing same	...	5s.	0	10	0
			£20	19	11

**Slater.**

No. 4. 1in. rubbed slate sinks, 2ft. 4in. by 1ft. 4in, 6in. deep at back and 3 $\frac{1}{2}$ in. deep at front, inside dimensions, with soap shelf at one corner, Lowes' 4in. brass grate and trap and letting in; including two ends of $\frac{3}{4}$ in. finished rubbed slate, 2ft. 2in. by 1ft. 6in.; with inch front to coal-bin underneath, about 3ft. 7in. long and 10in. high, fixed at ends with screws and nuts; also two $\frac{3}{4}$ in. tops, fixed to drip into sinks, one 1ft. 6in. by 1ft. 3in., the other 1ft. 9in. by 1ft. 6in., with rounded edges and corners; a $\frac{3}{4}$ in. shelf to be fixed under the smaller top of each sink, to form a box at end next scullery door. The whole to be properly grooved and screwed together, jointed with oil cement, and fixed complete	...	...	£3	12	0	0
No. 1. Cistern of 1 $\frac{1}{4}$ in. slate, to contain not less than 250 gallons, with all necessary holes cut for supply, service, and waste, and fixing same on roof on hollow brick piers 8in. high	...	...	£5 10s.	5	10	0
No. 1. 1 $\frac{1}{2}$ in. rubbed slate landing, 11ft. 6in. by 4ft., including all sawn edges, notches, sunk channel for water, 2in. by $\frac{1}{2}$ in., bedded on walls and cast iron girder complete; and including the staircase of 1 $\frac{1}{2}$ in. rubbed slate treads and risers, with winders top and bottom. The risers grooved into treads top and bottom, including rounded nosings, pinnings, &c. complete, 2ft. 10in. wide, and 22ft. 3in. girt down the centre	...	...	10	0	0	
Carried forward ...	...	27	10	0		

† Common stocks or hollow bricks, set in cement, may be used for these springers, at a cost of 6d. per foot, run—see Specification.

‡ See Specification respecting brick sills, the cost of which will be 6d. per foot run.

		@	£ s. d.
	Brought forward ...	27	10 0
No. 4. 1 $\frac{1}{2}$ in. rubbed and rounded slate steps and risers to doorways, notched and morticed at each end for door frames, 3ft. 4in. long and 12in. wide, riser 4 $\frac{1}{2}$ in. wide ...	5s.	1 0 0	
			<u>£28 10 0</u>
NOTE—Slate shelves for safes included in carpenter's work.			

**Plasterer.**

Yds.	ft.	in.	
69	1 $\frac{1}{2}$	0 0	Superficial—Twice colour or lime-white to ceilings and walls ...
*95	0 0		Superficial Portland cement flooring, to first floor only ...
*95	0 0		Superficial hollow brick flooring to ground floor, as specified, on a bed of concrete, 4in. thick ...
* 109	9		Run Portland cement coping, weathered, throated, and including all angles, stoppings, &c., and core to ditto of two courses of plain tiles in cement, size 12 $\frac{1}{2}$ in. wide and 3in. thick. Hollow jamb bricks, No. 3, may be used if preferred ...
* 26	0		Run ditto circular ditto ditto to ramps ...
314	0		Run ditto, weathering to all external sailing courses and strings, 3in. wide ...
			1d. ... 2 17 7 $\frac{1}{2}$
			2s. 3d. ... 10 13 9
			3s. 4d. ... 15 16 8
			<u>£39 1 2</u>

**Carpenter and Joiner.**

No. 24. Turning pieces for window and door arches	... ... ...	9d. ... 0 18 0
No. 1. Centre 10ft. 6in. span, 13in. soffit, for arch over staircase	... ...	0 3 8
For floor and roof arch centering, <i>see</i> Bricklayer's work.		
No. 1. Inch proper ledged door, hung with 3in. butts to fir wrought and rebated frame, 4 $\frac{1}{2}$ in. by 3in., to dust place under stairs, 5ft. by 2ft. 5in. outside of frame	... ... ...	15s. ... 0 15 0
No. 4. 1 $\frac{1}{2}$ in. square framed doors, 6ft. 9in. by 2ft. 7 $\frac{1}{2}$ in., filled in with $\frac{3}{4}$ in. tongued and beaded boards, with panel at top for and including $\frac{3}{4}$ in. rough plate glass, 1ft. 11in. by 8in. stopped in on both sides with beads, hung with 3 $\frac{1}{2}$ in. butts to fir wrought, rebated, and chamfered frames 4 $\frac{1}{2}$ in. by 3in.; $\frac{3}{4}$ in. wrought and chamfered fillet or stop, mitred and nailed round inside, 2 $\frac{1}{2}$ in. wide ...	27s. ... 5 8 0	
No. 4. Ditto four panel square framed doors hung, with 3in. butts to 1 $\frac{1}{2}$ in. wrought, rebated, chamfered, and staff beaded linings, 3 $\frac{1}{2}$ in. wide, staff beads to be mitred and nailed round on one side; opening of brickwork, 6ft. 8in. by 2ft. 3in. for water-closets	... ... ...	19s. ... 3 16 0
No. 8. Ditto four panel square framed doors, hung with 3in. butts to 1 $\frac{1}{2}$ in. linings as before; opening of brickwork, 6ft. 8in. by 2ft. 5in. to children's bed rooms	... ... ...	20s. ... 8 0 0
No. 4. Ditto ditto ditto 6ft. 8in. by 2ft. 8in. to parents' bed rooms	22s. ... 4 8 0	
No. 8. Ditto ditto ditto hung to 1 $\frac{1}{2}$ in. linings, as before, 6 $\frac{1}{2}$ in. wide, ditto, 6ft. 8in. by 2ft. 8in. to living rooms	24s. ... 9 12 0	
No. 4. Ditto deal cupboard fronts to living rooms, with doors hung in two heights, including 3in. butts, locks, turnbuckles, &c. Mitred staff bead and No. 4. 1in. wrought shelves and bearers, 6ft. 8in. by 3ft. and 1ft. 2in. deep, fixed complete	30s. ... 6 0 0	
No. 4. Ditto ditto ditto in parents' bed room, with doors hung in one height, to correspond with room doors, including hinges, &c. &c., as before, 1 $\frac{1}{2}$ in. rounded top; a $\frac{3}{4}$ in. double chamfered hook-rail, with No. 4 iron hat and cloak pins fixed therein, 6ft. 8in. by 3ft. 9in. and 10in. deep	24s. ... 4 16 0	
Carried forward ...	... ... ...	43 16 8

	@	£ s. d.
Brought forward ...		43 16 8
No. 4. Three light window frames for living rooms, opening of brick-work, 4ft. 6in. by 4ft. 6in., with fir solid, rebated, and chamfered frame and mullions, with oak sunk, weathered, and throated sills, 1 $\frac{1}{4}$ in. window board, and 1 $\frac{1}{4}$ in. staff bead, mitred round inside, prepared for glazing, in frame in two heights with $\frac{3}{4}$ in. T iron cross bar in centre. The centre compartment to have a wrought iron casement, hung with hinges, and with proper strong stay bar fastenings, and including all labour, &c., in fixing same complete ...	26s. 8d. ... 5 6 8	
No. 4. Three light ditto ditto to childrens' bed rooms, same size, with frame, &c., as before, but the window board to be fixed in two lengths to the outer compartments, with 1 $\frac{1}{4}$ in. staff bead mitred round each, the centre compartment to be stopped in with $\frac{1}{2}$ in. rubbed slate, bedded in putty, and screwed to frame; wrought iron casements hung to the outer compartments, with fastening, &c. ...	36s. 6d. ... 7 6 0	
No. 4. Two light ditto ditto, opening of brickwork, 4ft. 6in. by 3ft., with fir frame and T iron cross bars, as before, and with wrought iron casements, hung in one compartment with proper stay bar, fastenings, &c., complete with window board, staff beads, &c. ...	20s. ... 4 0 0	
No. 4. Two light window frames to sculleries, opening of brickwork, 3ft. 2in. by 2ft. 3in., with fir frame and mullions, as before, with $\frac{3}{4}$ in. T iron bar, as last. The top square on one side to have an iron casement hung to the T iron cross bar, to open downwards, with proper rack and knob fastening, complete ...	14s. 8d. ... 2 18 8	
No. 4. One light ditto ditto to water closets, opening of brickwork, 3ft. 2in. by 1ft. 2in., with fir frame, as last, and glazed, the upper square to open, as in scullery ...	11s. 8d. ... 2 6 8	
No. 4. Deal plate racks, 3ft. high, 1ft. 6in. wide, and 8in. deep, framed in three heights with $\frac{1}{2}$ in. top, fixed complete in sculleries ...	6s. 6d. ... 1 6 0	
No. 4. Safes in sculleries, 5ft. 3in. high 2ft. 3in. wide, formed with one $\frac{3}{4}$ in. wrought end, 14in. wide, and 1 $\frac{1}{4}$ in. square framed front and doors, hung with 3in. butts, knob, turnbuckle, &c., and No. 3. $\frac{3}{4}$ in. rubbed slate shelves (including bottom) to each, all fixed complete ...	18s. ... 3 12 0	
No. 4. 1 $\frac{1}{4}$ in. wrought and frame clamped table tops, 4ft. 6in. by 2ft. 6in. hung with 3 $\frac{1}{2}$ in. butts to the window board (4in. wide), including two framed angle brackets hung to proper frame or 1in. grounds; one 4in. brass neck bolt to each, and the corners of top rounded, all fixed complete ...	13s. 6d. ... 2 14 0	
No. 4. 1in. deal wrought shelves, 9in. wide and 9ft. 5in. long, in two lengths on one side and end of sculleries, with $\frac{3}{4}$ in. chamfered hook rail, 3 $\frac{1}{2}$ in. wide, fixed underneath, and including No. 1 wrought iron bracket to each, fixed complete ...	6s. 3d. ... 1 0 0	
No. 8. 1in. Ditto ditto ditto, 5ft. long and 2ft. 6in. run, $\frac{3}{4}$ in. chamfered all round hook rail, 3 $\frac{1}{2}$ in. wide, with 2 iron hat and cloak pins screwed on, in childrens' bed rooms ...	2s. 3 $\frac{1}{2}$ d. ... 0 18 4	
No. 4. 1in. Ditto ditto ditto, 9ft. 6in. long and 5ft. hook rail, as before, and No. 1 iron bracket and 3 iron hat and cloak pins to each, in parents' bed rooms ...	5s. 2d. ... 1 0 8	
No. 4. $\frac{3}{4}$ in. chamfered all round hook rails, 3 $\frac{1}{2}$ in. wide 4ft. 6in. long, and No. 4 ditto ditto 3ft. long, fixed on the entrance-door side of living rooms ...	2s. ... 0 8 0	
No. 4. $\frac{3}{4}$ in. ditto ditto ditto, 3ft. 6in. long, fixed in lobbies, with No. 3 iron hat and cloak pins screwed on to each ...	2s. ... 0 8 0	
No. 24. Bow latches, fixing on internal doors ...	6d. ... 0 12 0	
No. 4. 9in. barrel bolts, ditto on external doors ...	4d. ... 0 1 4	
Carried forward ...		78 0 0

		@	£	s.	d.
	Brought forward ...	...	78	0	0
No. 4.	9in. rim locks, ditto ditto ditto	1s.	0	4	0
No. 1.	6in. dead ditto, ditto dust ditto	9d.	0	0	9
No. 4.	Pairs ornamental hinge straps screwed on external doors with three screws each	4d.	0	1	4
No. 4.	Escutcheons ditto ditto	2d.	0	0	8
			<u>£78</u>	6	9

NOTE.—All Ironmongery not specially described, such as hinges, screws, nails, &c., must be provided and fixed by the Contractor.

### Smith and Founder.

Cwt. qrs. lbs.					
3 1 0	In No. 1. Cast iron girder, 12ft. long $7\frac{1}{2}$ in. deep, with 3in. flange inside at bottom, to receive slate landing, top flange 2in. wide $1\frac{1}{2}$ in. thick, projecting $\frac{1}{2}$ in. on either side, with sunk holes for railing	...	1	12	0
3 2 0	In No. 1. Ditto ditto railing, 11ft. 6in. long and 3ft. 3in. high	10s.	1	15	0
2 0 10	In No. 1. Cast iron railing, 7ft. 6in. long ditto ditto	10s.	1	0	10
	No. 4. Ditto ditto springers, including one 6in. coupling to each for floor and roof arches, built in external walls, &c., as per drawing, each 5cwt. 3qrs. 13lbs.	52s.	10	8	0
	No. 4. Ditto ditto ditto, 8ft. long, over small bed rooms, each 1ewt. 3qrs. 13lbs.	17s.	3	8	0
3 3 17	324ft. run $\frac{3}{4}$ in. wrought iron tension rods with heads, couplings, and nuts, complete	28s.	5	9	4
	No. 1. Wrought iron suspension bar, $1\frac{1}{2}$ in. by $\frac{1}{2}$ in. to support upper winders of stairs, 19in. long, turned at each end...		0	2	0
	No. 1. Ditto ditto, 12in. long, ditto...				
	No. 1. Ditto ditto, 9in. long, ditto ...				
	No. 24. Iron casements, and No. 16 cross bars for windows, are included in joiner's work.				
			<u>£23</u>	15	2

### Furnishing Ironmonger.†

No. 26.	Cast iron air bricks	...	9d.	0	19	6
No. 16.	Ditto internal ventilating valves, 12in. long	3s.	2	8	0	
No. 16.	Ditto ditto ditto, 7in. long	2s. 3d.	1	16	0	
No. 12.	Cornice ditto	2s. 6d.	1	10	0	
No. 4.	Box ventilators with dampers for safes	2s.	0	8	0	
No. 4.	Cast iron dust doors, 10in. by $8\frac{1}{2}$ in.	7s. 6d.	1	10	0	
No. 24.	4in. bow latches, with brass furniture	1s.	1	4	0	
No. 4.	9in. iron rim locks, with ditto and large knob	5s.	1	0	0	
No. 4.	9in. barrel bolts	9d.	0	3	0	
No. 1.	6in. dead lock	2s.	0	2	0	
No. 4.	Pairs ornamental hinge straps	2s.	0	8	0	
No. 4.	Escutcheons to key-holes	3d.	0	1	0	
No. 4.	Nicholson's ranges, with oven and boiler fitted with brass tap	47s. 6d.	9	10	0	
No. 4.	Bed room stoves for 12in. openings	17s.	3	8	0	
No. 4.	Ditto ditto for 17in. ditto	20s.	4	0	0	
No. 2.	Scrapers included in mason's work.					
			<u>£28</u>	7	6	

† This Ironmongery may be supplied according to agreement.

**Plumber.**

lbs.		@	£	s.	d.
24	4lb. milled lead seatings to iron girder and springers ...	3½d.	0	7	0
39 0	Run 4in. clear bore cast iron stack pipe, with heads, and junctions for four closets, including all straps, tacks, &c., fixed complete and made good to drains ...	1s. 6d.	2	18	6
28 0	Run 2in. lead waste pipe, and fixing to sinks, including six joints and all labour ... ... ... ...	2s.	2	16	0
30 0	Run ¼in. iron gas pipe for service to sinks, including bends, elbows, couplings, &c., fixed complete ...	9d.	1	2	6
	No. 4. ½in. brass bib cocks, with round water ways to sinks, fixed complete ... ... ... ...	5s.	1	0	0
	No. 1. ¼in. Dann's patent ball valve, and including 30ft. run ¼in. iron gas pipe for laying on the water to the cistern on roof, with bends, &c. complete ... ...	33s.	1	13	0
	No. 1. Inch washer and waste, and including about 20in. of lead pipe waste, with trumpet mouth, fixed in cistern, complete ... ... ... ...	9s.	0	9	0
	No. 4. Sets of Dann's water closet apparatus complete, with all necessary piping, &c., and including Ridgway & Co.'s earthen pans fixed ... ... ... ...	40s.	8	0	0
			£	18	6 0

**Glazier.**

154 8	Superficial good 21oz. sheet glass properly bedded, and stopped in with putty ... ... ... ...	6d.	3	17	4
32 8	Ditto ditto ¼in. rough plate, ditto ditto ditto ...	1s.	1	12	8
					£5 10 0

**Painter and Stainer.**

Yards. ft. in.					
140 0	Run three oils red lead to cast iron girders and springers.				
324 0	Run ditto ditto ditto to ¼in. tension rods ...				
19 0	Run ditto ditto ditto iron railing, 3ft. 3in. high ...				
	No. 4. Dust doors, three oils, and finished stone colour.				
	No. 26. Air bricks, ditto ditto ditto ...				
	No. 48. Ventilators, ditto ditto ditto ...				
	No. 2. Scrapers, ditto ditto ditto ...				
	No. 4. Plate racks, ditto ditto ditto ...				
208 0 0	Superficial† Wood Staining as oak, and once varnish...	6d.	5	4	0
	No. 8. Three light window frames, 4ft. 10in. by 4ft. 8in., both sides, and including the window board and staff beads ...	1s. 6d.	0	12	0
	No. 4. Two light ditto ditto, 4ft. 8in. by 3ft. 4in. ditto ditto ditto ...	1s. 4d.	0	5	4
	No. 4. Two light ditto ditto, 3ft. 4in. by 2ft. 7in. ditto ditto ditto ...	1s. 3d.	0	5	0
	No. 4. One light ditto ditto, 3ft. 4in. by 1ft. 7in. ditto ditto ditto ...	1s.	0	4	0
			£	9	6 4

† If Oil Stain be used, the cost will be £3 9s. 1d.

## SUMMARY OF THE FOREGOING WORKS.

	£ s. d.
Excavator and Bricklayer	206 11 9
Mason	20 19 11
Slater	28 10 0
Plasterer	39 1 2
Carpenter and Joiner	78 6 9
Smith and Founder	23 15 2
Furnishing Ironmonger	28 7 6
Plumber	18 6 0
Glazier	5 10 0
Painter and Stainer	9 6 4
	<hr/>
	£458 14 7

*Reductions which may be made in the above amounts by the following alterations, as described or referred to in the Specification.*

If the bed rooms are divided according to the supplementary plan at page 11, one iron springer over the recess in each of the centre bed rooms being dispensed with	£5 1 6
If the springers for floor arches are partially brick in cement in lieu of stone to the central walls	2 8 0
Omitting 2in. York slabs to fire-places where Portland cement is used	2 2 3
Hollow-brick window sills in lieu of tooled York	3 11 7
If cast iron enamelled sinks and other scullery fittings connected therewith are substituted for slate, as specified	4 0 0
If lime and ash floors, as described at p. 18, be substituted for Portland cement on the upper story, allowing full 2 in. thickness over the crown of the arch, and 3 in. over the spandrels, levelled with concrete as provided, deduct 1s. per yard	4 15 0
If ditto ditto be substituted for tile or hollow brick on ground floor, deducting concrete, and allowing 1s. 6d. per yard for the lime and ash floor, with the substratum	8 14 2
Jamb bricks used for coping in lieu of Portland cement	4 0 0
If oil stain be used in lieu of stain and varnish	1 14 10
	<hr/>
	£ 36 7 4
	<hr/>
	£422 7 3

IN the preceding estimate, the hollow brickwork is calculated on the supposition that the cost of the patent bonded hollow bricks in the field is 32s. per thousand, or 42s. on the ground, which latter is equivalent to ordinary-sized bricks at 23s. 7d.; the labour, mortar, and scaffolding are taken at the usual average price in London, without deduction for the saving which will be effected both in labour and mortar by the increased size of the bricks, causing a diminution of one-third the superficial jointing.

The unglazed patent hollow bricks used in building the Model Houses were chiefly made by Clayton's patent brick and tile machines, to which the prize of the Royal Agricultural Society of England was awarded in 1850. The process of manufacture may be seen at the Atlas Works, No. 21, Upper Park-place, Dorset-square, where detailed particulars may be obtained; also of Mr. John Whitehead, Prize brick and tile machine maker, Preston. Written communications may be addressed to the Patentee, at the Office of the Society for Improving the Condition of the Labouring Classes, 21, Exeter Hall, or at his residence, 10, Connaught-square, Hyde-park.

The patent bonded facing bricks, and those used in the floors and roof, were made at Aylesford, near Maidstone; the patent bonded internal red bricks at the Ruxley works, near Esher; and some of the partition bricks at Mr. Cubitt's works, Pimlico.

The white and yellow glazed bricks were made by Mr. Ridgeway, Cauldon-place, The Potteries, Staffordshire, who also supplied specimens of earthenware pipes, sinks, wash-hand basins, and the water-closet pans, which require no wood fittings.

The paving tiles used on the ground floor were from Mr. Peak, Tunstall, Staffordshire, or Macclesfield, South City Road Basin; and from Messrs. H. & R. Haywood, Burslem, Staffordshire, and No. 15, South Wharf, Paddington.

The price of the metallic lava covering to the roof is that at which Messrs. Orsi and Armani, 6, Guildhall-chambers, Basinghall-street, are willing to execute similar work for model lodging-houses.

The Portland cement-floors are calculated at the prices furnished by Messrs. J. B. White and Sons, 17, Millbank-street, Westminster, who also supply French plaster.

The price given for the slate staircase and landing, and for the scullery fittings, also in slate, is that at which Mr. Wm. North, New Palace-road, Lambeth, engages to supply and fix them in London.

The traps used in the sinks, &c., are those of Lowe and Co., Salford. Agents, Messrs. Kennard and Co., 67, Upper Thames-street, who will supply the sinks and shelves for the sculleries in cast-iron galvanized.

Mr. Samuel Hood, 81, Upper Thames-street, will supply the sinks and shelves, in cast-iron, with the inner part of the sink enamelled, at 40s. per set.

Mr. J. Arnold, of 109, Jermyn-street, will execute staining and once varnishing at 6d. per yard, or preparing and staining in oil at 4d. per yard.

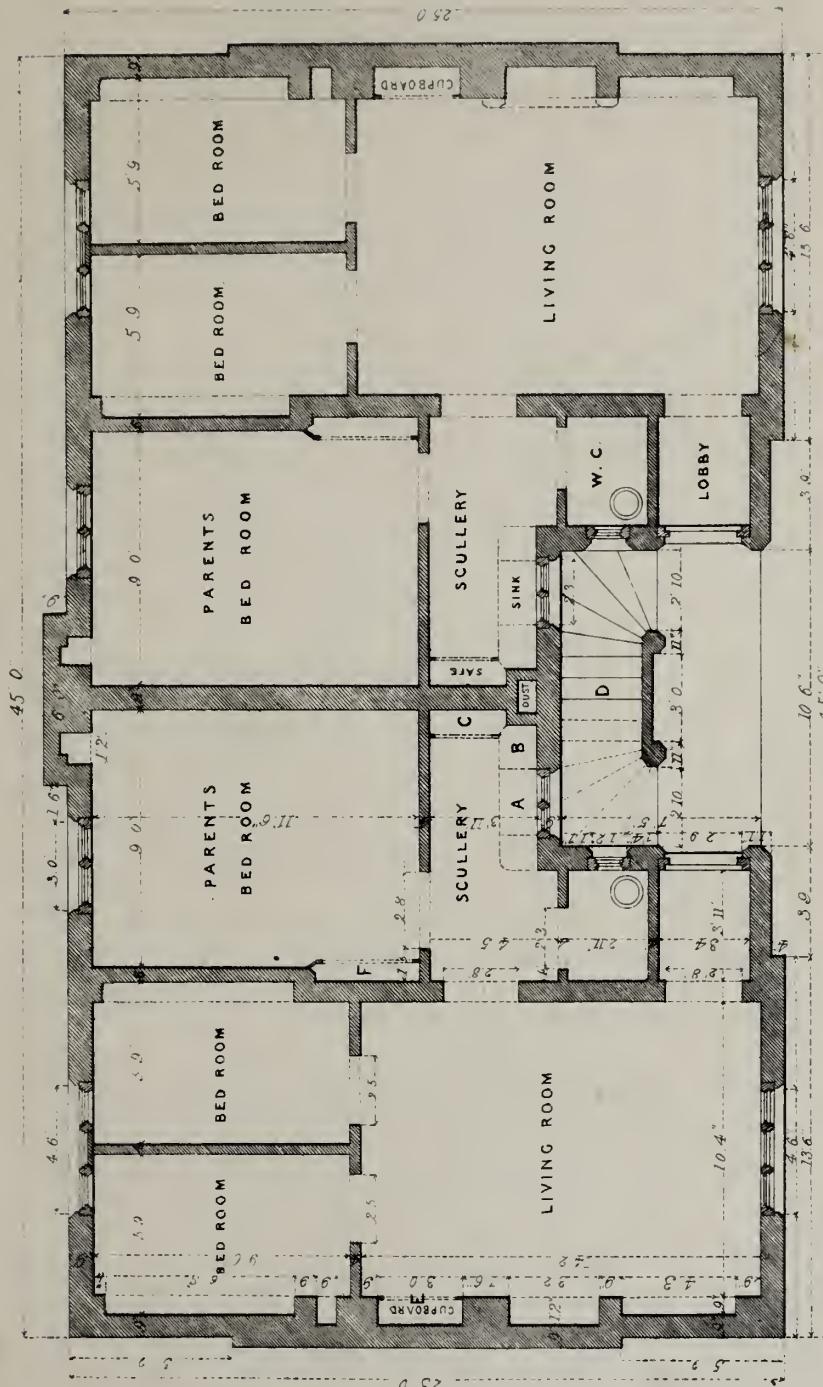
The ventilators and furnishing ironmongery, including window-lights, casements, and bars, are supplied by Hart and Son, 53, Wych-street, Strand, at the schedule prices.

Marshall, 49, Broad-street, Bloomsbury, supplies 21 oz. glass, as well as rough plate, at the price calculated in the estimate.

The bell-pull apparatus described for the water-closets is supplied by J. W. Dann, 44, Cromer-street, Gray's-inn-road.

The stoves specified are supplied by W. Nicholson, of Newark-on-Trent. Stoves from Mr. Leslie, of Conduit-street, and Pierce, of Jermyn-street, are exhibited in some of the rooms, as well as the "Cottager's stove," manufactured by Bailey, 272, High Holborn.

A superior fire-clay oven, made at the Bovey Tracey Pottery, Devon, and exhibited in the Model House, is charged at 10s., exclusive of carriage.



## GROUND FLOOR PLAN

### A Sink with Coal Box under

**B** Plate Rack over entrance to Dust Shaft  
Meat Safe ventilated fibro-cement hollow brick

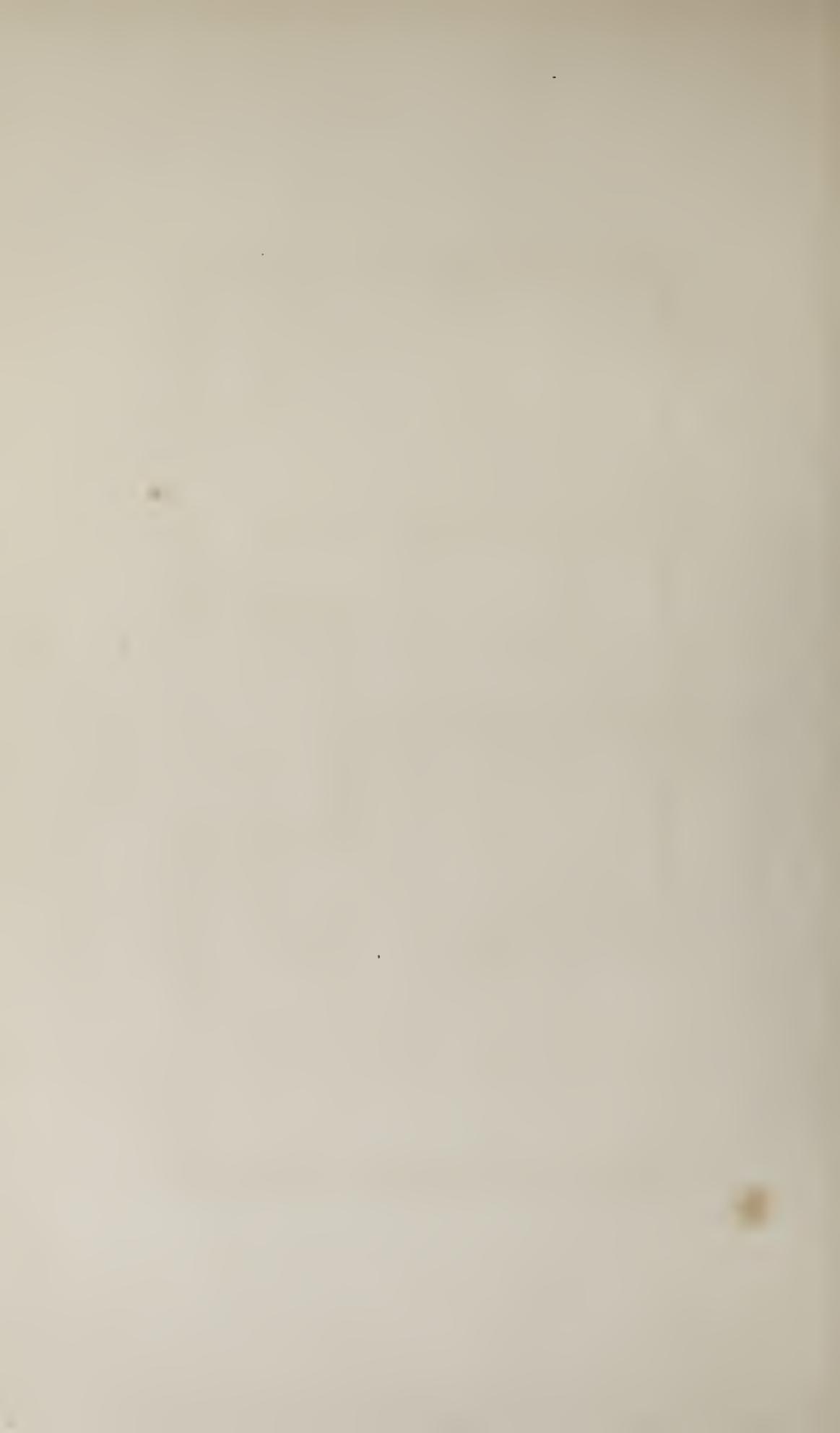
C Meat Safe ventilated through hollow bricks.

Dust-2% of slate with Dust place under

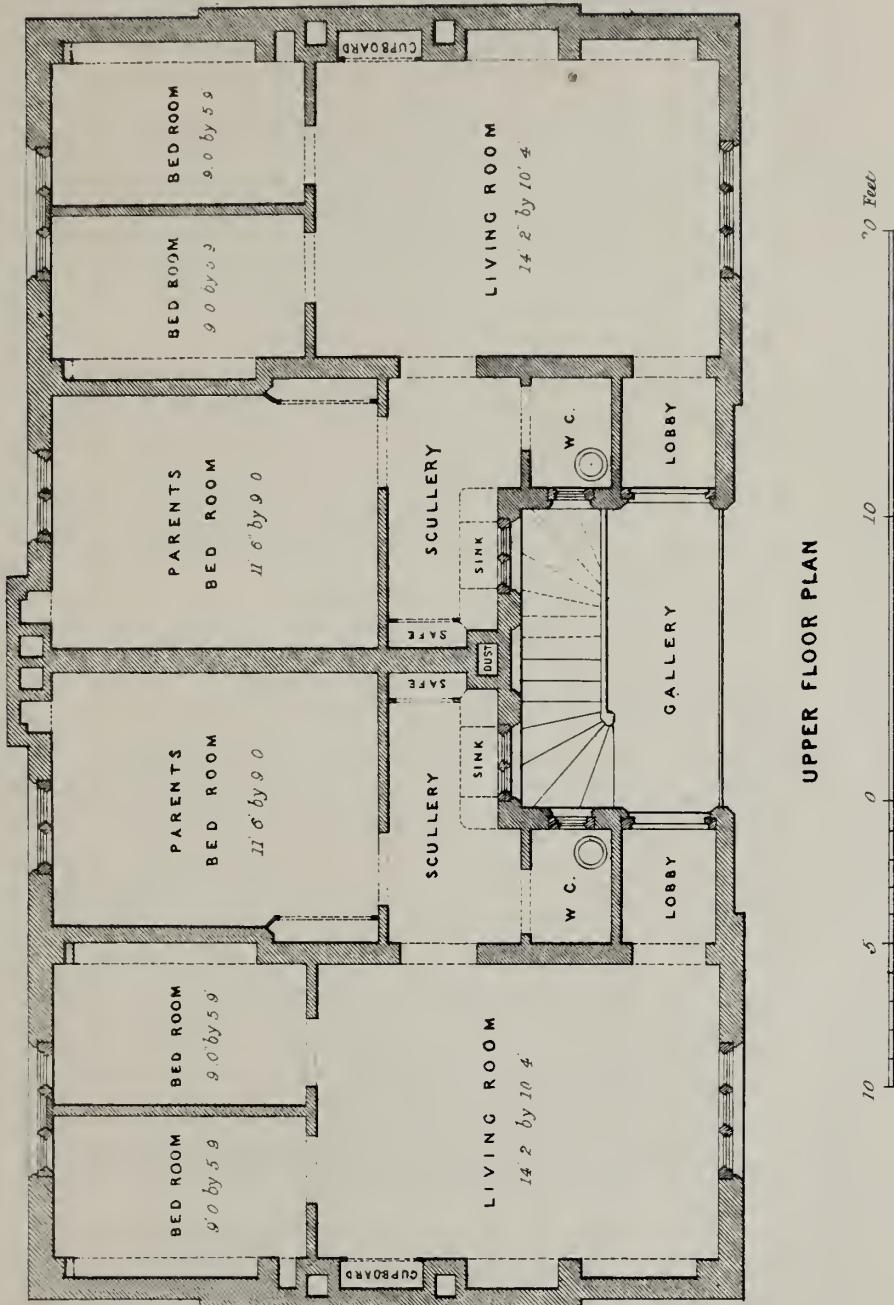
• Cuplo and warned from back of Freyl

**F** Linen Closet in this recess.

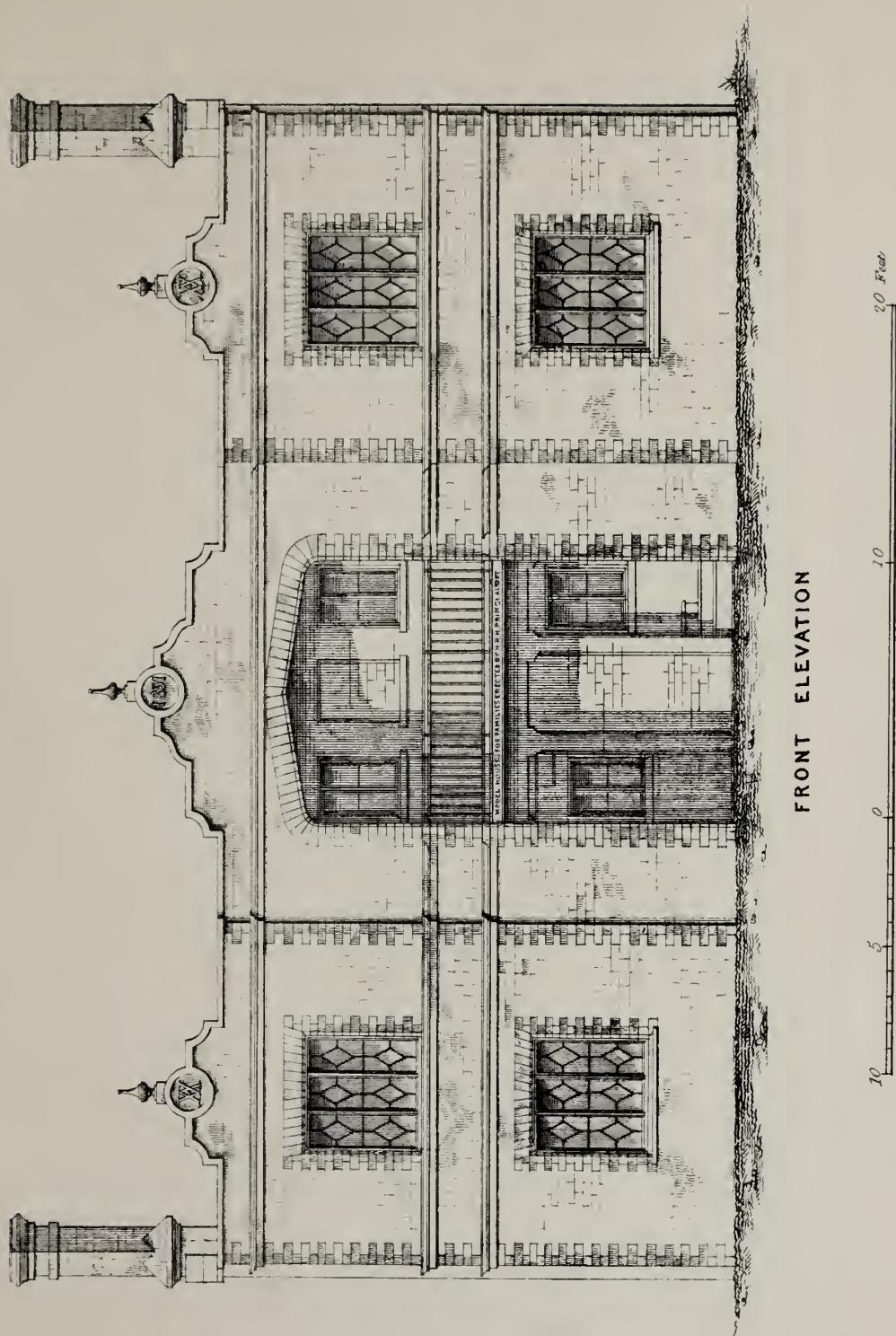
20 *Five*



## UPPER FLOOR PLAN

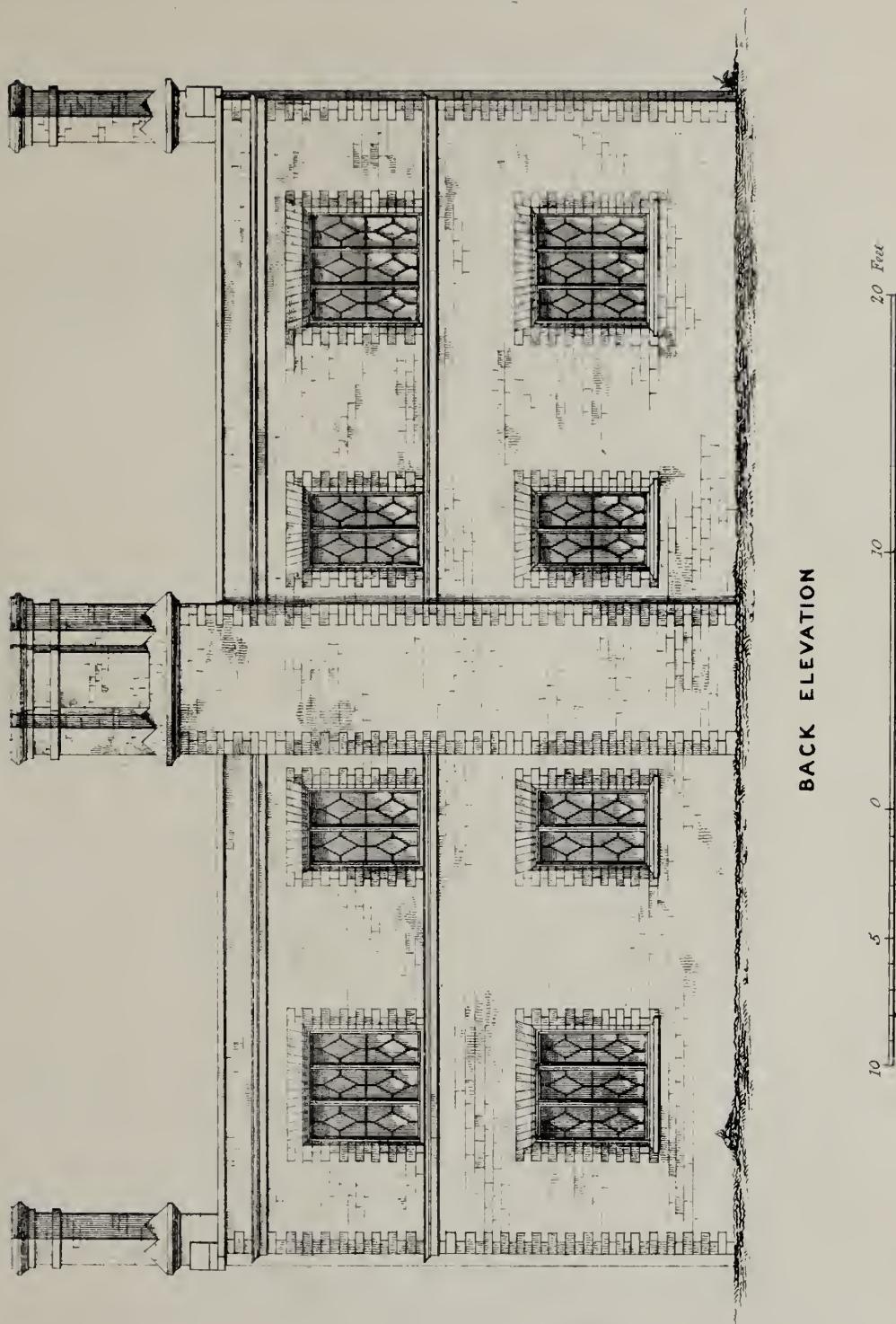






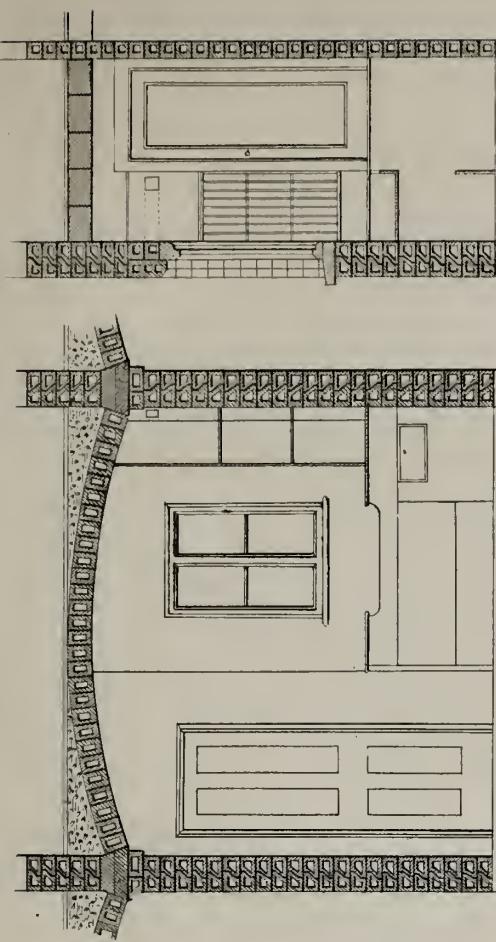


BACK ELEVATION



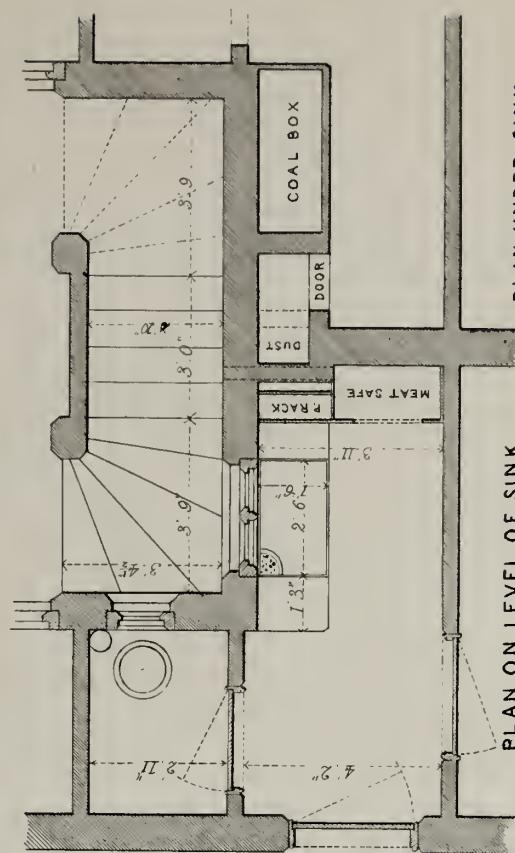


DETAILS AT LARGE OF SCULLERY &c.

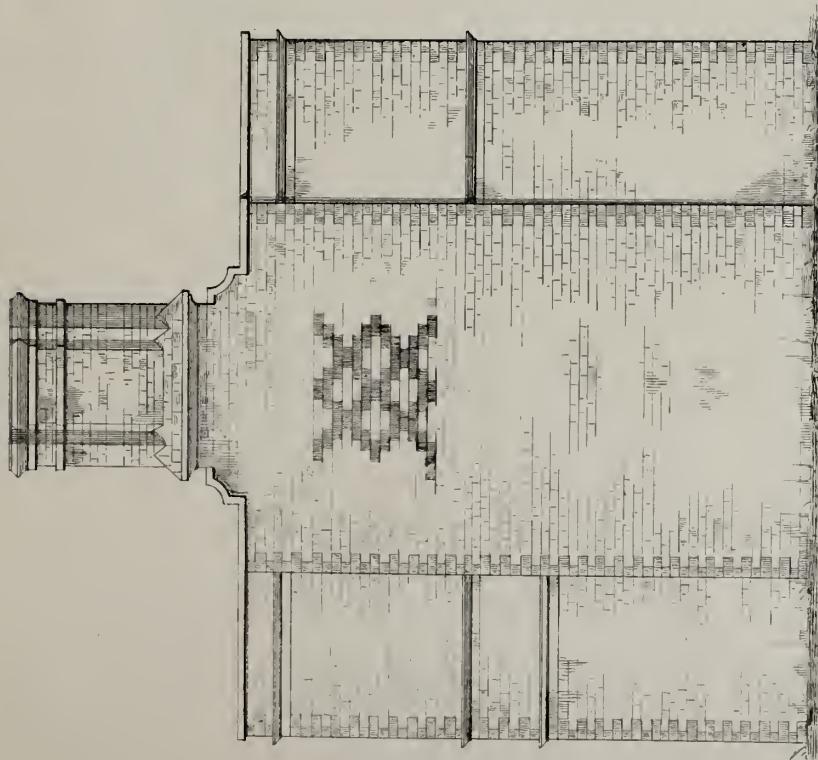


## TRANSVERSE SECTION

## LONGITUDINAL SECTION



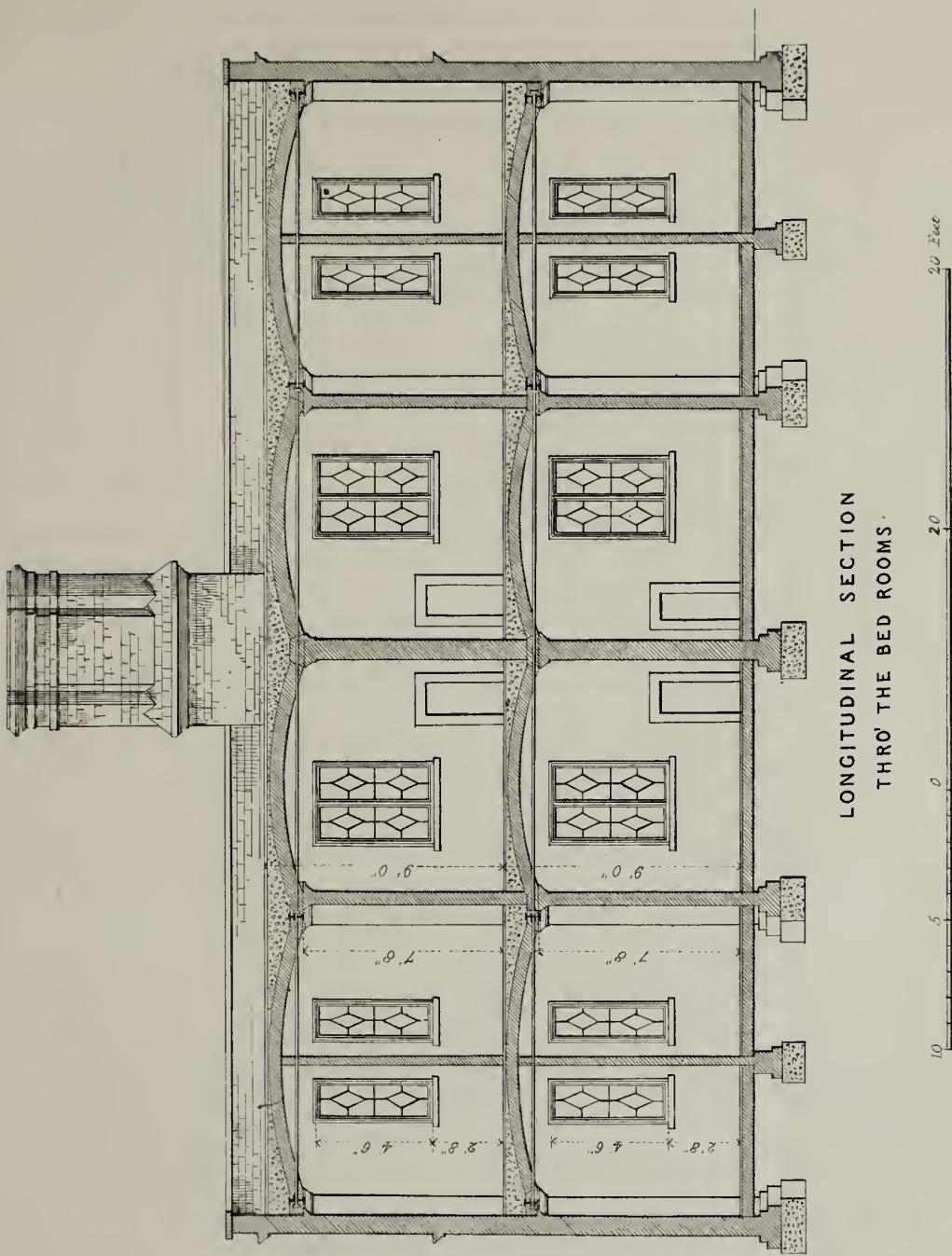
## PLAN ON LEVEL OF SINK



END ELEVATION





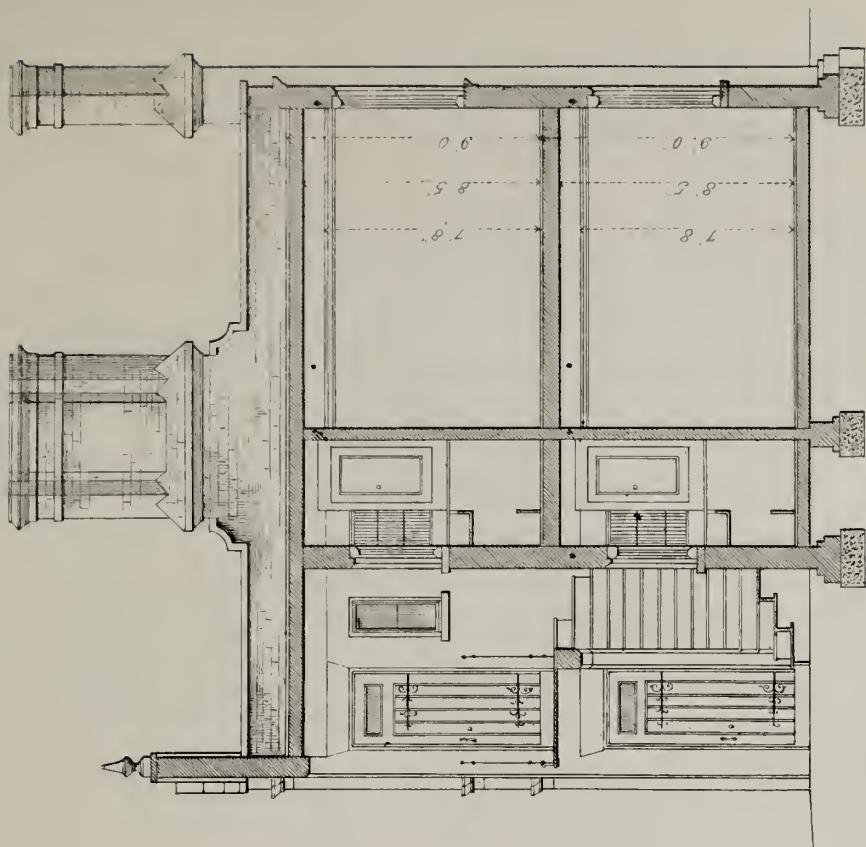




TRANSVERSE SECTION  
THRO' STAIRCASE

20' Free

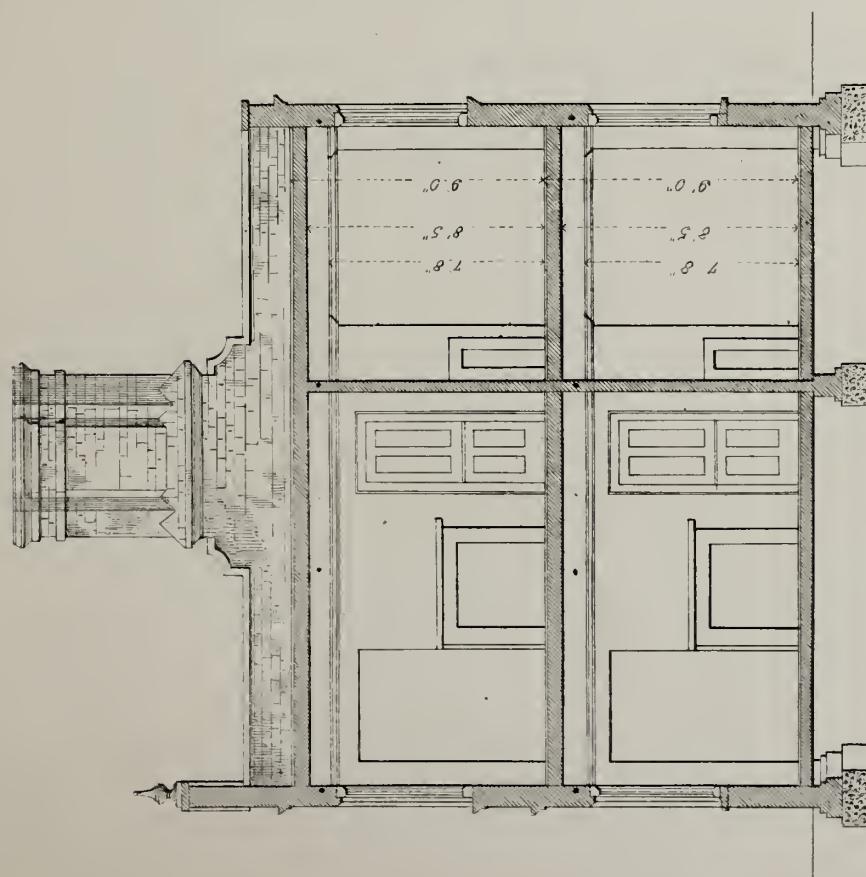
30'



TRANSVERSE SECTION  
THRO' LIVING ROOM

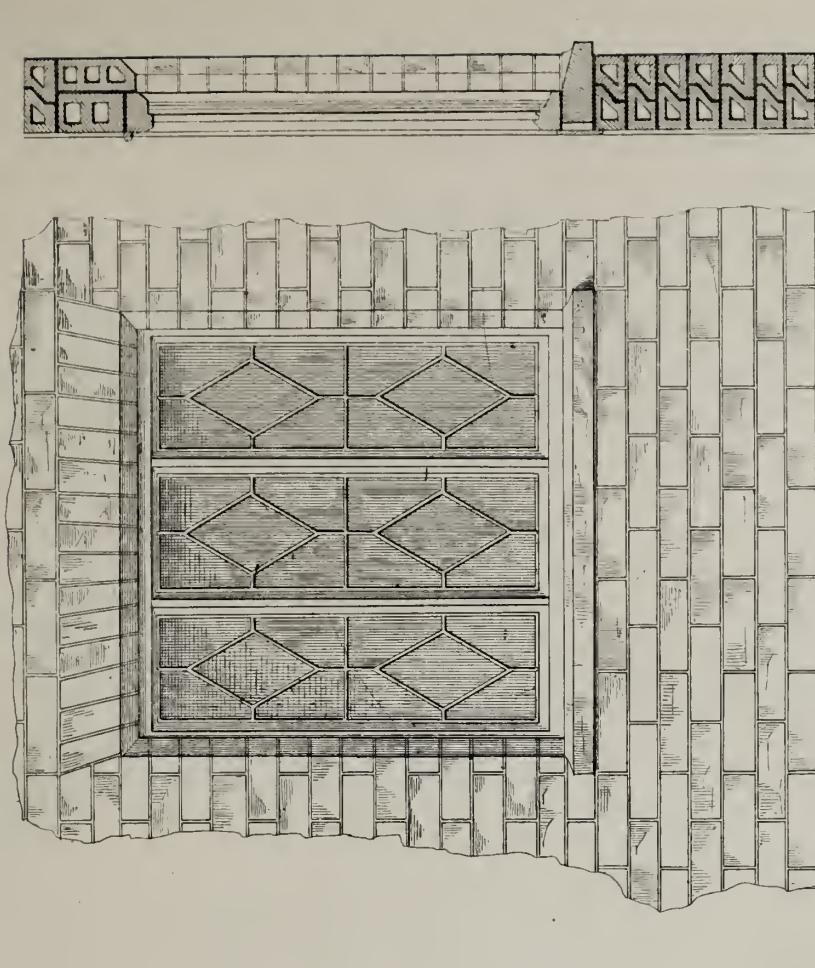
5' 0"

7' 0"

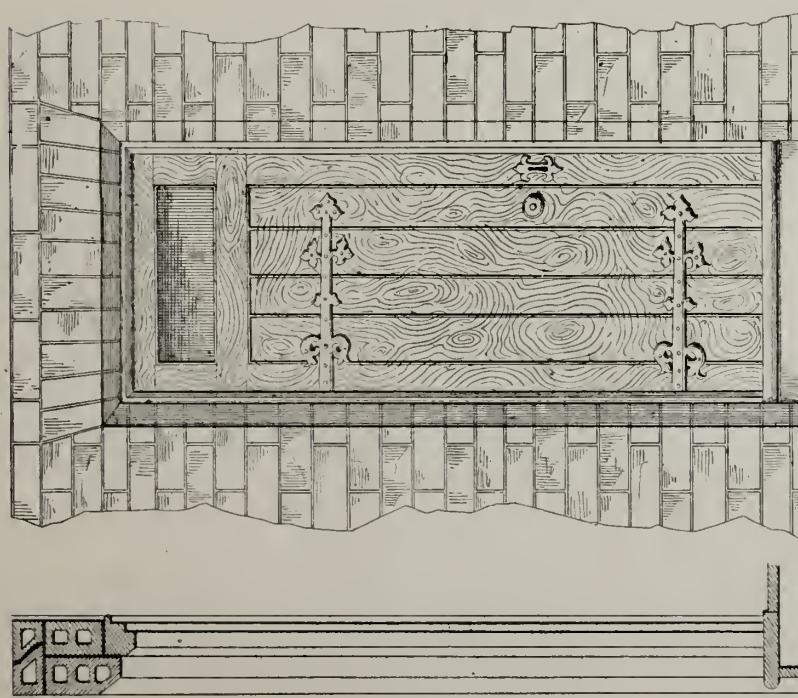




SECTION.  
ELEVATION OF WINDOW.



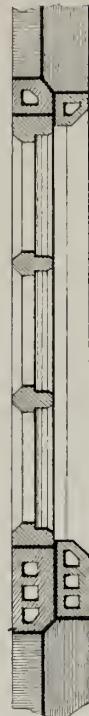
ELEVATION OF DOOR  
SECTION



INTERNAL DOOR  
JAMB & LINING



PLAN

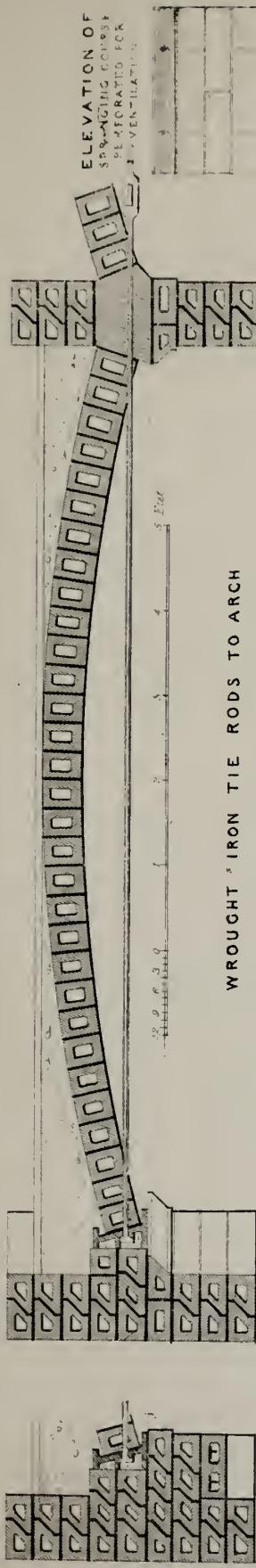


12 10 8 6 4 3 2 1 0 9 8 7 6 5 4 3 2 1 0 9 8 7 6 5 4 3 2 1 0 10 Feet



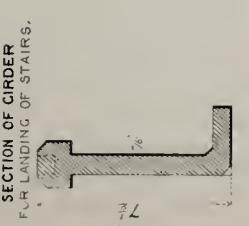
## CONSTRUCTIVE DETAILS

### SECTION THROUGH FLOOR ARCH THE ROOF BEING CONSTRUCTED ON THE SAME PRINCIPLE

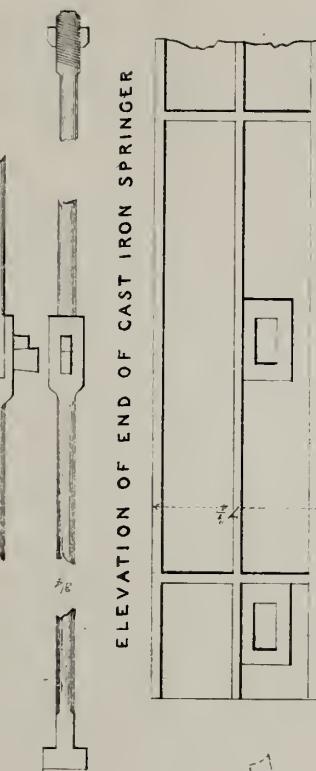


SECTION OF WALL  
SHewing LEVEL SOFFIT  
OVER RECESS AND WITH  
SQUARE SPRINGING COURSE  
IN LIEU OF SPAYED

SECTION OF GIRDER  
FOR LANDING OF STAIRS



SECTION THRO'  
SPONGING  
RECESS IN  
ROOF

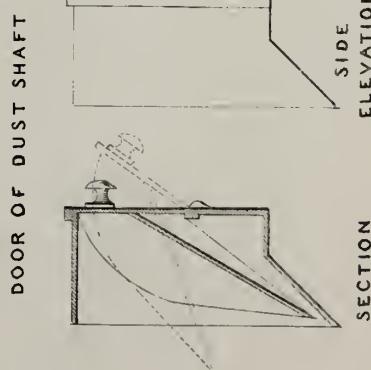
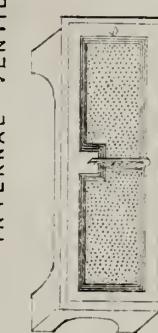


ELEVATION OF END OF CAST IRON SPRINGER



EXTERNAL AIR BRICKS

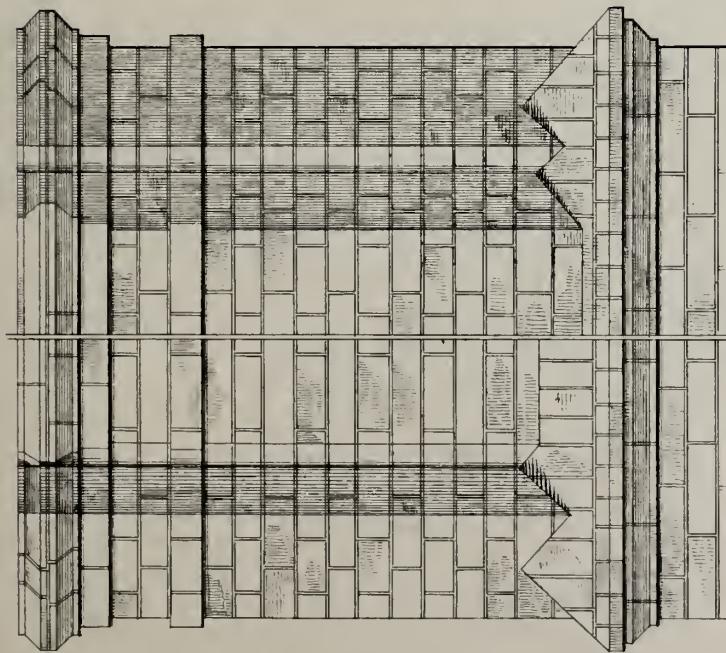
INTERNAL VENTILATORS



SCALE OF DETAILS 1/4 FULL SIZE



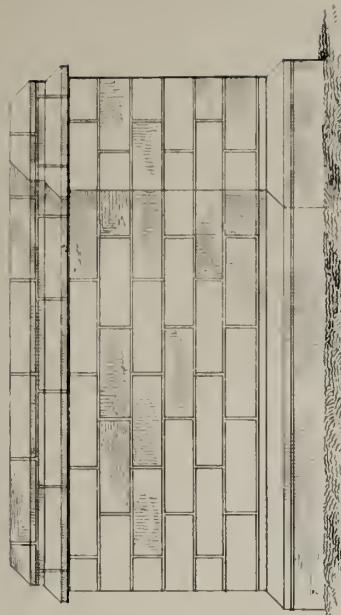
CHIMNEY STACK  
WITH FOUR FLUES



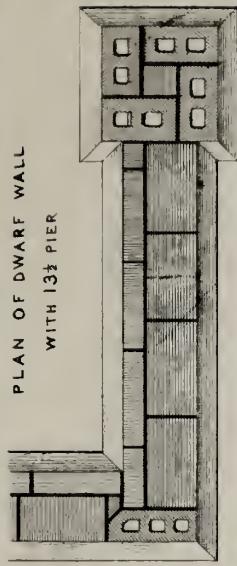
SECTION



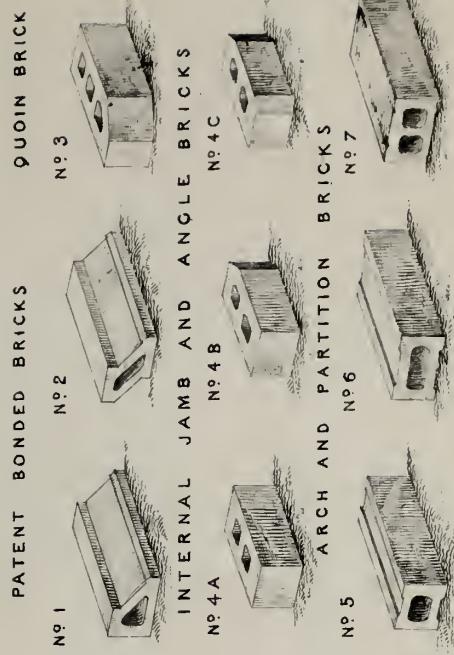
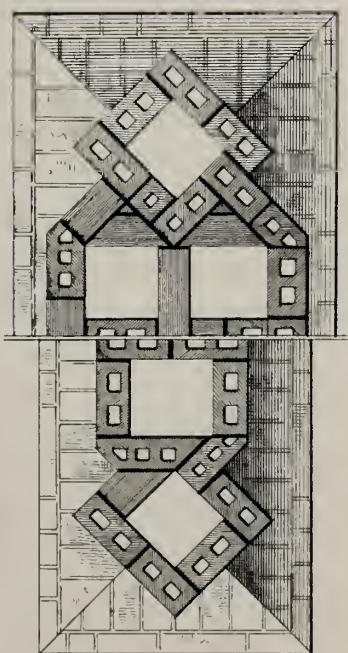
ELEVATION OF DWARF WALL



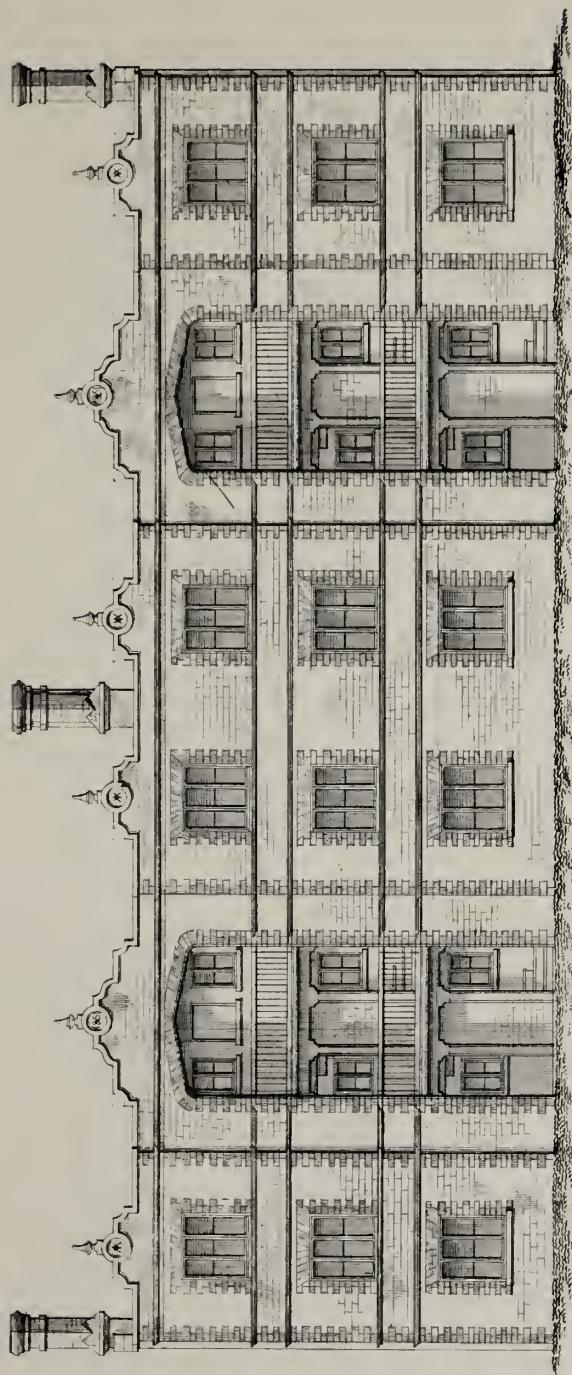
PLAN OF DWARF WALL  
WITH 13½ PIER



PLAN  
WITH SIX FLUES  
WITH FOUR FLUES





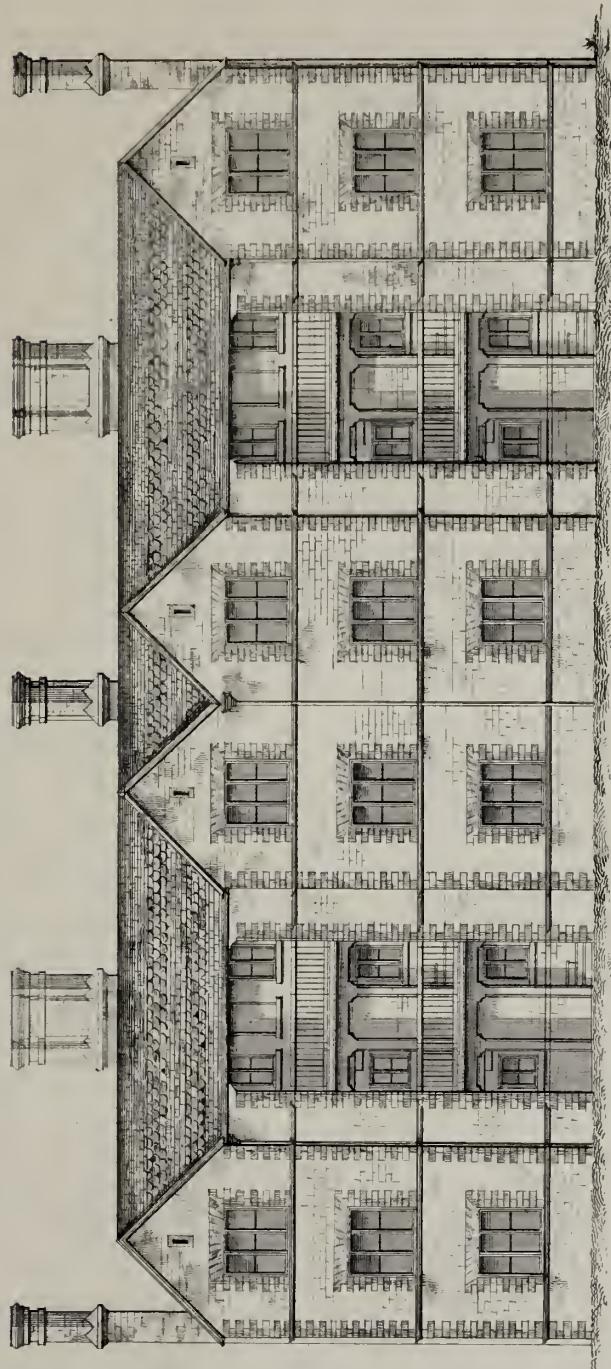


ELEVATION OF TWO PAIR OF THREE STORY HOUSES  
ON THE PLAN OF THE PRINCE'S MODEL HOUSES

ACCOMMODATING TOGETHER TWELVE FAMILIES  
THE ROOF OF FIRE PROOF CONSTRUCTION

50 Feet  
40  
30  
20  
10  
0





ELEVATION OF TWO PAIR OF THREE STORY HOUSES  
ON THE PLAN OF THE PRINCE'S MODEL HOUSES

ACCOMMODATING TOGETHER TWELVE FAMILIES

THE ROOF OF ORDINARY CONSTRUCTION

50' Foot  
40  
30  
20  
10  
0



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